

**ILLUSTRATED PARTS BREAKDOWN
MANUAL**

2615A

TERMINAL

Serial Numbers Prefixed: 1337

Manual part no. 02615-90013

Microfiche part no. 02615-90014

Options Covered

This manual covers option 015 in addition to the
standard HP 2615A Terminal.



FOREWORD

This manual contains replaceable parts information for the Hewlett-Packard 2615A Terminal. Model number HP 2615A is the HP designation for the Minibee Computer Terminal manufactured by Beehive Medical Electronics Incorporated, Salt Lake City, Utah.

For operating information, refer to the *HP 2615A Terminal Operator's Manual*, HP part no. 02615-90003.

For servicing information, refer to the *HP 2615A Terminal Service Manual*, HP part no. 02615-90004.

The options for the HP 2615A Terminal are given below:

- Option 015: Standard HP 2615A Terminal requiring a 230-volt, 50/60-Hertz power source.
- Option 900: Standard HP 2615A Terminal with appropriate power plug for operation in Great Britain, Cyprus, Nigeria, Rhodesia, and Singapore.
- Option 901: Standard HP 2615A Terminal with appropriate power plug for operation in Australia and New Zealand.
- Option 902: Standard HP 2615A Terminal with appropriate plug for operation in Europe, Saudi Arabia, and United Arab Republic.

The content of this manual was prepared by Beehive Medical Electronics, Incorporated.



ILLUSTRATED PARTS BREAKDOWN

MINI BEE COMPUTER DISPLAY TERMINAL

TERMINAL AND OPTIONS COVERED IN THIS MANUAL

PART NUMBER	DESCRIPTION
112-0370-0000	MINI BEE, 25 LINE TERMINAL
112-0370-0001	MINI BEE, 10 BIT WORD-PARITY TO MARKING STATE (25 LINE)
112-0370-0002	MINI BEE, 50 HZ OPTION
112-0370-0003	MINI BEE, 12 LINE OPTION
112-0370-0026	MINI BEE, CUSTOMER SPEICAL OPTION



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SECTION I
GENERAL INFORMATION



1-1. INTRODUCTION

1-2. This illustrated parts breakdown manual contains replaceable parts list, exploded views, parts location diagrams and numerical lists of parts for all assemblies and subassemblies of the "Mini Bee" computer display terminal, except the power supply, cathode ray tube monitor and the keyboard subassembly. These are broken down in detail in appendix A, B, and C.

1-3. MAJOR ASSEMBLY CONFIGURATIONS

1-4. SECTION II: This section contains replaceable parts list and exploded views for the Mini Bee top assembly, the monitor assembly, and the keyboard assembly.

1-5. SECTION III: This section is a replaceable parts list and parts location diagram for the Mini Bee printed circuit board assembly.

1-6. VENDOR FURNISHED SUBASSEMBLY CONFIGURATION

1-7. The subassemblies detailed in appendix A, B, and C are vendor furnished items to Beehive Medical Electronics, and, therefore are not subject to the same change control as Beehive manufactured items. They may change without notice. However, every effort will be made to update this manual to the latest configuration of these subassemblies as changes are noted by Beehive Medical Electronics.

1-8. APPENDIX A: This appendix contains replaceable parts list and main chassis board parts location diagram for the 12" CRT monitor.

1-9. APPENDIX B: This appendix contains replaceable parts lists and parts location diagrams for the 100W, 3 Output, power supply.

1.10. APPENDIX C: This appendix contains replaceable parts lists and parts location diagrams for the keyboard. This keyboard is shipped with either one of two circuit boards, appendix C-1 or appendix C-2.



MAJOR ASSEMBLY CONFIGURATIONS

2-1. INTRODUCTION

2-2. The replaceable parts lists and exploded views in this section are listed by item number. Replaceable parts are broken down by item number to piece part and subassembly levels. Subassemblies are further broken down to the piece part level by using the subassembly item number followed by a letter suffix to denote the detail part item number. Variable and optional parts are listed at the end of the parts list, they are grouped under their respective options to the Mini Bee System.

2-3. REPLACEMENT PARTS LISTS

2-4. The columns in the item numbered lists provide the following information for each part.

a. Item Number: The item number indicates where replaceable parts are found on the exploded view.

b. Reference Designation: The reference designation shown is the complete unit, assembly, subassembly and piece part designation where applicable. Refer to table 2-4 for reference designation explanation.

c. Beehive Part No.: The Beehive part number for each replaceable part.

d. QTY: The total quantity of each replaceable part used in the assembly or subassembly to which it belongs. (A/R is used to indicate bulk stored items used only as required.)

e. Description: The name or title of each replaceable part.

f. MFR Code: A five digit code that indicates a manufacturer of the replaceable part. This is the same code number as the manufacturers Federal supply code. See table 2-5 for a list of manufacturers.

g. Manufacturer Part No.: The manufacturer's part number for each replaceable part.

2-5. EXPLODED VIEWS

2-6. The exploded views in this section correspond to the replaceable parts lists. Starting with figure 2-1 which shows the disassembly and cover removal of the Mini Bee terminal subsequent exploded views show the disassembly and assembly of the keyboard and monitor assemblies (Figure 2-2 and 2-3).

2-7. TABLES

a. Table 2-4: This table cross references the reference designation from class designation letter to item name.

b. Table 2-5: This table is a cross reference from manufacturer code no. per Federal supply code for manufacturers cataloging handbooks H4-1 and H4-2 to the manufacturers name and location.

2-8. ORDERING PARTS

2-9. Most parts contained in the terminal are available commercially from electronic parts outlets. When it is necessary to order spare or replacement parts from B.M.E.I., include the parts description, part number, model and serial number data of the monitor as listed on the serial number plate and, if applicable, the part reference designation number. Orders for these parts should be sent to:

Beehive Medical Electronics Inc.
870 West 2600 South
Salt Lake City, Utah 84119

For emergency service contact Field Service
Telephone: Area Code (801) 487-0741 or
Teletype Area (910) 925-5271



TABLE 2-1: MINI-BEE COMPUTER DISPLAY TERMINAL REPLACEABLE PARTS LIST

Item No.	Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1	1A1	Variable	1	Monitor Assembly	52541	
2	1A2	Variable	1	Keyboard Assembly	52541	
3	1MP1	Variable	1	Housing, Monitor Cover	52541	
4	1MP2	Variable	6	Screw, Painted	52541	
	1	112-0370-0000		Mini-Bee (Standard 25 Line 60 HZ)		
1	1A1	112-0379-0000	1	Monitor Assembly	52541	
2	1A2	112-0371-0000	1	Keyboard Assembly	52541	
3	1MP1	112-0381-0000	1	Housing, Monitor Cover	52541	
4	1MP2	112-0555-0000	6	Screw, Painted	52541	
	1	112-0370-0001		Mini-Bee (10 Bit Word - Parity to Marking State)		
1	1A1	112-0379-0001	1	Monitor Assembly	52541	
2	1A2	112-0371-0000	1	Keyboard Assembly	52541	
3	1MP1	112-0381-0000	1	Housing, Monitor Cover	52541	
4	1MP2	112-0555-0000	6	Screw, Painted	52541	
	1	112-0370-0002		Mini-Bee (50 HZ Option)		
1	1A1	112-0379-0002	1	Monitor Assembly	52541	
2	1A2	112-0371-0000	1	Keyboard Assembly	52541	
3	1MP1	112-0381-0000	1	Housing, Monitor Cover	52541	
4	1MP2	112-0555-0000	6	Screw, Painted	52541	
	1	112-0370-0003		Mini-Bee (12 Line Option)		
1	1A1	112-0379-0003	1	Monitor Assembly	52541	
2	1A2	112-0371-0000	1	Keyboard Assembly	52541	
3	1MP1	112-0381-0000	1	Housing, Monitor Cover	52541	
4	1MP2	112-0555-0000	6	Screw, Painted	52541	
	1	112-0370-0026		Mini-Bee (Special Option)		
1	1A1	112-0379-0004	1	Monitor Assembly	52541	
2	1A2	112-0371-0001	1	Keyboard Assembly	52541	
3	1MP1	112-0381-0001	1	Housing, Monitor Cover	52541	
4	1MP2	112-0555-0001	6	Screw, Painted	52541	

TABLE 2-2: MINI-BEE KEYBOARD ASSEMBLY 112-0371

Item No.	Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1	1A2MP1	Variable	1	Housing, Keyboard	52541	
2	1A2A1	Variable	1	Plate, Keyboard Assembly	52541	
2a	1A2A1MP1	Variable	1	Plate, Keyboard	52541	
2b	1A2A1MP2	607-2014	1	Keyboard	91929	53 SW1-8
2c	1A2A1MP3	112-0377	1	Bracket, Pot Mtg	52541	
2d	1A2A1MP4	112-0376	2	Plate, Lock	52541	
2e	1A2A1MP5	703-0113-G10A	4	Spacer	06540	8153-A-0632
2f		701-0002-06	10	Nut, Self-Locking	---	6-32NC
2g		701-0003-06	10	Washer, Flat	---	6
3	1A2MP2	112-0373	1	Housing, Cable	52541	
4	1A2MP3	703-0054-05B	4	Feet	24324	MAC - 100
5	1A2W1	112-0374	1	Keyboard Cable Assembly	52541	
5a		801-0801-01	1	Cable (6 Feet Long)	24027	
5b	1A2W1J9	606-0091-2411	1	Connector	52541	
5c	1A2W1P11	606-0011-256P	1	Connector	13511	17-10250-1
5d		606-9122-03	1	Connector Shell	13511	17-1372
5e	1A2W1R1	601-1011-104	1	Potentiometer	71450	VY 9665
5f	1A2W1CR1, CR2	608-3000-2	2	Diode, Light Emitting	29083	MV 5022
5g		701-0007-014	2	Screw, Pan Head	---	
5h		609-9004	1	Key Connector	---	Sullins ISM-K1
5i		804-0301-136	A/R	Tape, Lacing (Black)	92194	LC 136
5j		802-0201-03	A/R	Tubing, Heat Shrink	---	3/32 Dia Black
5k		606-7123-01	1 Pr.	Latch, Spring Retainer	13511	17-529
6	1A2MP4	705-0101	1	Knob, Control	52541	
7		701-0007-029	5	Screw, Pan Head	---	6-32NCX 7/16 LG
8		701-0003-06	8	Washer, Flat	---	6
9		701-0004-06	5	Washer, Split Lock	---	6
10		701-0002-06	3	Nut, Self-Locking	---	6-32 NC
11		701-0011-01	1	Plate, Cable Tie	59730	TC 105A
12		703-0010-01	1	Tie, Cable	06383	SST M-C
13	1A251	607-0104-2011	1	Switch, Rocker	91929	8K 2011
14	1A2S1MP1	112-0437	1	Cap, Switch	52541	
	1A2	112-0371-0000		Mini-Bee (Standard Color)		
1	1A2MP1	112-0372-0000	1	Housing, Keyboard	52541	
2	1A2A1	112-0543-0000	1	Plate, Keyboard Assembly	52541	
2a	1A2A1MP1	112-0575-0000	1	Plate, Keyboard	52541	
	1A2	112-0371-0001		Mini-Bee (Special Option)		
1	1A2MP1	112-0372-0001	1	Housing, Keyboard	52541	
2	1A2A1	112-0543-0001	1	Plate, Keyboard Assembly	52541	
2a	1A2A1MP1	112-0575-0001	1	Plate, Keyboard	52541	

TABLE 2-3: 1A1 MONITOR ASSEMBLY 112-0379

Item No.	Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1	1A1MP1	Variable	1	Housing, Monitor Base	52541	BMEI
2	1A1W1	112-0426	1	Cable	52541	BMEI
2a	1A1W1P1	606-0011-256P	1	Connector	13511	17-20250-1
2b	1A1W1J11	606-0011-256S	1	Connector	13511	17-10250-1
3	1A1MP2	112-0382	1	Bracket, Monitor Support	52541	BMEI
4	1A1A2	Variable	1	Monitor, 12"	52541	
5	1A1MP3	112-0401	4	Spacer	52541	BMEI
6	1A1MP4	112-0390	1	Frame, Bezel Support	52541	BMEI
7		701-0007-054	4	Screw, Pan Head	---	8-32NC-2 1/4 Lg.
8		701-0003-08	4	Washer, Flat	---	8
9		701-0004-08	4	Washer, Split Lock	---	8
10		703-0700-10	6pr	Fastener, Hedlock	04963	SJ3310 (YPBS)
11	1A1MP5	112-0389	1	Bezel	52541	BMEI
12	1A1MP6	Variable	1	Window, Plexiglass	52541	BMEI
13		802-0503-9394	A/R	Tape, 1/4" Wide	26066	Y9394
14	1A1PS1	Variable	1	Power Supply	28905	
15		701-0007-059	3	Screw, Pan Head	---	10-32NF-3/8 Lg.
16		701-0003-10	3	Washer, Flat	---	10
17		701-0004-10	3	Washer, Split Lock	---	10
18	1A1MP7	703-0054-05	4	Feet	24324	MCA-100 Black
19	1A1A1	Variable	1	Circuit Board Assembly	52541	BMEI
20	1A1MP8	112-0383-1	1	Bracket, Support (left)	52541	BMEI
21	1A1MP9	112-0383-2	1	Bracket, Support (right)	52541	BMEI
22	1A1MP10	112-0385	1	Bracket, Connector Mtg.	52541	BMEI
23		606-9123-01	1pr	Spring Latch	13511	17-529
24		701-0007-015	4	Screw, Pan Head	---	4-40NC-3/8 Lg.
25		701-0004-04	8	Washer, Split Lock	---	4
26		701-0003-04	8	Washer, Flat	---	4
27		701-0001-04	6	Nut, Hex	---	4-40NC
28		701-0007-013	2	Screw, Pan Head	---	4-40NC-1/4 Lg.
29		606-9203	4	Connector Post	71468	D20418-2
30	1A1W2	112-0378	1	Wire Harness	52541	BMEI
30a	1A1W2XF1	611-1001-02	1	Fuse Holder	71400	HKP
30b	1A1W2J10	606-0085-08C	1	Connector	27264	03-09-1061
30c		606-2006-1118	5	Terminal	27264	02-09-1118
30d	1A1W2S4	607-0404-21	1	Switch	09353	U-21
30e	1A1W2P7	606-1202	1	Receptacle	16428	17252
30f	1A1E1	704-0160-T002	1	Terminal Lug	92219	T2002
30g	1A1TB1E1-E7	704-0160-T002	7	Terminal Lug	92219	T2002
30h	1A1TB1	606-3010-04	1	Terminal Block	71785	4-140
30i	1A1TB1E8-E9	606-9112-140J	2	Jumper Buss	71785	140J-1
30j	1A1W2W1	606-0605	1	Plug & Cord Assembly	82877	16415
31		701-0007-28	16	Screw, Pan Head	---	6-32NC-3/8 Lg.
32		701-0003-06	28	Washer, Flat	---	6

TABLE 2-3: 1A1 MONITOR ASSEMBLY 112-0379 (cont.)

Item No.	Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.	
33		701-0004-06	28	Washer, Split Lock	---	6	
34		701-0007-32	6	Screw, Pan Head	---	6-32NC-3/4 Lg.	
35		701-0007-30	4	Screw, Pan Head	---	6-32NC-1/2 Lg.	
36		701-0002-06	2	Nut, Self Locking	---	6-32 NC	
37		703-0011-01	3	Plate, Cable Tie	59730	TC 105A	
38		703-0010-01	3	Cable Tie	06383	SST1M-C	
39	1A1W3	112-0433	1	Cable Assembly, Monitor	52541	BMEI	
39a	1A1W3J12	606-0001-1011	1	Connector	05574	2VK10S/1-2	
39b		606-9001	1	Key Polarizing	05574	091-0024-000	
39c	1A1W3J5	606-0081-126S	1	Connector	27264	09-50-3121	
39d		704-0165-01	9	Terminal, Crimp	27264	08-50-0106	
39e		606-9002	2	Key, Polarizing	27264	2560-1	
40	1A1MP11	112-0335	2	Spacer	52541	BMEI	
41	1A1B1	112-0336	1	Fan Assembly	52541	BMEI	
42	1A1MP12	112-0432	1	Fan Duct	52541	BMEI	
43	1A1MP13	702-1001-02	1	Filter, Fan	23936	5502	
44	1A1MP14	702-1001-04	1	Guard, Finger	23936	5504	
45	1A1MP15	705-0143-03	1	Knob	95146	KCVS 500B	
46	1A1MP16	112-0491	1	Sticker	52541	BMEI	
47	1A1TB1MP1	606-9113-03	1	Marker Strip	---		
48	1A1TB1MP2	703-0112-18	2	Spacer, Hex (6-32NC x 1/4 Lg.)	83330	8421	
49	1A1TB1MP3	112-0435	1	Shield, High Voltage	52541	BMEI	
50	1A1TB1MP4	701-0007-034	2	Screw, Pan Head	---	6-32NC-1" Lg.	
51	1A1TB1MP5	112-0438	1	Power Conversion Diagram	52541	BMEI	
52		701-0321-32	2	Rivet, Pop (3/32 DIA)	77075	AD32ABS	
53	1A1MP17	112-0436	1	Name Plate	52541	BMEI	
54	1A1F1	Variable	1	Fuse (Variable)	---		
	1A1	112-0379-0000	Mini-Bee (Standard, 25 Line, 60 HZ)				
1	1A1MP1	112-0380-0000	1	Housing, Monitor Base	52541	TV-B12-C	
4a	1A1A2	610-0507	1	Monitor 12" (See Appendix A for parts listing)	13993		
12	1A1MP6	112-0388	1	Window, Plexiglass	52541		
14a	1A1PS1	610-0318	1	Power Supply (See Appendix B for parts listing)	28905		
19	1A1A1	112-0455-0001	1	Circuit Board Assembly	52541		
54	1A1F1	Variable	1	Fuse	---		
	1A1	112-0379-0001	Mini-Bee (10 Bit Word - Parity to Marking State)				
1	1A1MP1	112-0380-0000	1	Housing, Monitor Base	52541	TV-B12-C	
4a	1A1A2	610-0507	1	Monitor 12" (See Appendix A for parts listing)	13993		
12	1A1MP6	112-0388	1	Window, Plexiglass	52541		

TABLE 2-3: 1A1 MONITOR ASSEMBLY 112-0379 (cont.)

Item No.	Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
14a	1A1PS1	610-0318	1	Power Supply	28905	
19	1A1A1	112-0455-0003	1	(See Appendix B for parts listing)	52541	
54	1A1F1	Variable	1	Circuit Board Assembly	---	
				Fuse		
	1A1	112-0379-0002		Mini-Bee (50 HZ Option)		
1	1A1MP1	112-0380-0000	1	Housing, Monitor Base	52541	
4	1A1A2	112-0552	1	Monitor, Shielded Assy.	52541	
4a	1A1A2A1	610-0507	1	Monitor	13993	TV-B12-C
				(See Appendix A for parts listing)		
4b	1A1A2MP1	112-0554	1	Magnetic Shield, Monitor	52541	
4c		703-0001-831	1	Cable Clamp	---	
4d		701-0007-28	1	Screw, Pan Head	---	6-32NC-3/8 Lg.
4e		701-0003-06	1	Washer, Flat	---	6
4f		701-0004-06	1	Washer, Split Lock	---	6
4g		701-0001-06	1	Nut, Hex	---	6-32 NC
12	1A1MP6	112-0388	1	Window, Plexiglass	52541	
14	1A1PS1	112-0542-0000	1	Power Supply, Shielded Assembly	52541	
14a	1A1PS1A1	610-0318	1	Power Supply	28905	
				(See Appendix B for parts listing)		
14b	1A1PS1MP1	112-0439-2	1	Shield, P.S BOK Cover	52541	
14c		701-00210026	5	Screw, Self Taping, Pan HD	---	6 x 1/4 Long
14d	1A1PS1MP2	112-0475	1	Magnetic Shield, P/S	52541	
14e		703-0115-304A	4	Spacer (1/2 dia. x 1/8 Lg.)	06540	9253-A194
19	1A1A1	112-0455-0001	1	Circuit Board Assembly	52541	
54	1A1F1	Variable	1	Fuse	---	
	1A1	112-0379-0003		Mini-Bee (12 Line Option)		
1	1A1MP1	112-0380-0000	1	Housing, Monitor Base	52541	
4a	1A1A2	610-0507	1	Monitor 12"	13993	TV-B12-C
				(See Appendix A for parts listing)		
12	1A1MP6	112-0388	1	Window, Plexiglass	52541	
14a	1A1PS1	610-0318	1	Power Supply	28905	
				(See Appendix B for parts listing)		
19	1A1A1	112-0455-0002	1	Circuit Board Assembly	52541	
54	1A1F1	Variable	1	Fuse	---	
	1A1	112-0379-0004		Mini-Bee (Special Option)		
1	1A1MP1	112-0380-0001	1	Housing, Monitor Base	52541	
4	1A1A2	112-0552	1	Monitor, Shielded Assembly	52541	
4a	1A1A2A1	610-0507	1	Monitor	13993	TV-B12-C
				(See Appendix A for parts listing)		
4b	1A1A2MP1	112-0554	1	Magnetic Shield, Monitor	52541	
4c		703-0001-831	1	Cable Clamp	---	
4d		701-0007-28	1	Screw, Pan Head	---	6-32NC-3/8 Lg.
4e		701-0003-06	1	Washer, Flat	---	6
4f		701-0004-06	1	Washer, Split Lock	---	6
4g		701-0001-06	1	Nut, Hex	---	6-32 NC

TABLE 2-3: 1A1 MONITOR ASSEMBLY 112-0379 (cont.)

Item No.	Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
12	1A1MP6	112-9014-2	1	Window, Plexiglass	52541	6 - ¼ Lg. 9253-A194
14	1A1PS1	112-0542-0000	1	Power Supply, Shielded Assy.	52541	
14a	1A1PS1A1	610-0318	1	Power Supply (See Appendix B for parts listing)	28905	
14b	1A1PS1MP1	112-0439-2	1	Magnetic Shield, P/S Box Cover	52541	
14c		701-0021-026	5	Screw, Self Taping Pan Head	---	
14d	1A1PS1MP2	112-0475		Magnetic Shield, P/S	52541	
14e		703-0115-3044	4	Spacer (½ Dia. x 1/8 Lg.)	06540	
19	1A1A1	112-0455-0004	1	Circuit Board Assembly	52541	
54	1A1F1	Variable	1	Fuse	---	
54	1A1F1	112-0370-0000 Thru 611-0001-003	00026 1	Mini-Bee (115V Operation) Fuse 3 Amp @ 150 V, Slo-Blo	71400	3AS
54	1A1F1	112-0370-0000 Thru 611-0005-015	00026 1	Mini-Bee (230 V Operation) Fuse 1.5 Amp @ 250 V, Slo-Blo	71400	3AS

TABLE 2-4 Major Assembly Reference Designations

REFERENCE DESIGNATIONS	
A= Assembly, Subassembly, Integrated Circuit	P= Connector (Male)
B= Fan	PS= Power Supply
CR= Diode	R= Resistor, Potentiometer
E= Misc. Electrical Part	S= Switch
F= Fuse	TB= Terminal Block
J= Connector (Female)	W= Cable
MP= Misc. Mechanical Part	X= Socket

TABLE 2-5: Manufacturers code number to name and location.

The following code numbers are from the Federal Supply Code for manufacturers cataloging handbooks H4-1 and H4-2 and the latest supplement.		
Mfr. Code	Manufacturer	Address
04963	Minnesota Mining & Mfg. Co. Adhesives Coatings & Sealers Div.	St. Paul, Minnesota
05574	Viking Industries Inc.	Catsworth, California
06383	Panduit Corporation	Tinley Park, Ill.
06540	Amatom Ele. Hdwr. Div. of Mite Corp.	New Rochelle, N.Y.
09353	C and K Component Inc.	Watertown, Mass.
13511	Amphenol Corp. Amphenol Conn. Div.	Los Gatos, Calif.
13993	Ball Brothers Research Corp.	Boulder, Colorado
16428	Belden Corporation	Richmond, Ind.
23936	Pamotor Inc.	San Francisco, Calif.
24027		
24324	Russell Industries Inc.	Lynbrook, New York
26066	Minnesota Mining & Mfg. Co. Industrial Tape Div.	St. Paul, Minnesota
27264	Molex Products Co.	Downers Grove, Ill.
28905	Elexon Inc.	Santa Ana, Calif.
29083	Monsanto Co. Inc.	Santa Clara, Calif.
52541	Beehive Medical Ele. Inc.	Salt Lake City, Utah
59730	Thomas and Betts Co.	Elizabeth, New Jersey
71400	Bussman Mfg. Div. of McGraw Edison Company	St. Louis, Mo.
71450	CTS Corporation	Elkhart, Ind.
71468	ITT Cannon Ele. Inc.	Los Angeles, Calif.
71785	Cinch Mfg. Co. & Howard B. Jones Div.	Chicago, Ill.
77075	Pacific Metals Div. AM Castle & Co.	San Francisco, Calif.
82877	Rotron Inc.	Woodstock, New York
83330	Herman H. Smith Inc.	Brooklyn, New York
91929	Honeywell Incorporated Microswitch Division	Freeport, Ill.
92219	Waldom Electronics Inc.	Chicago, Ill.
95146	Alco Electronics Products Inc.	Lawrence, Mass.
92194	Alpha Wire Corporation	Elizabeth, New Jersey

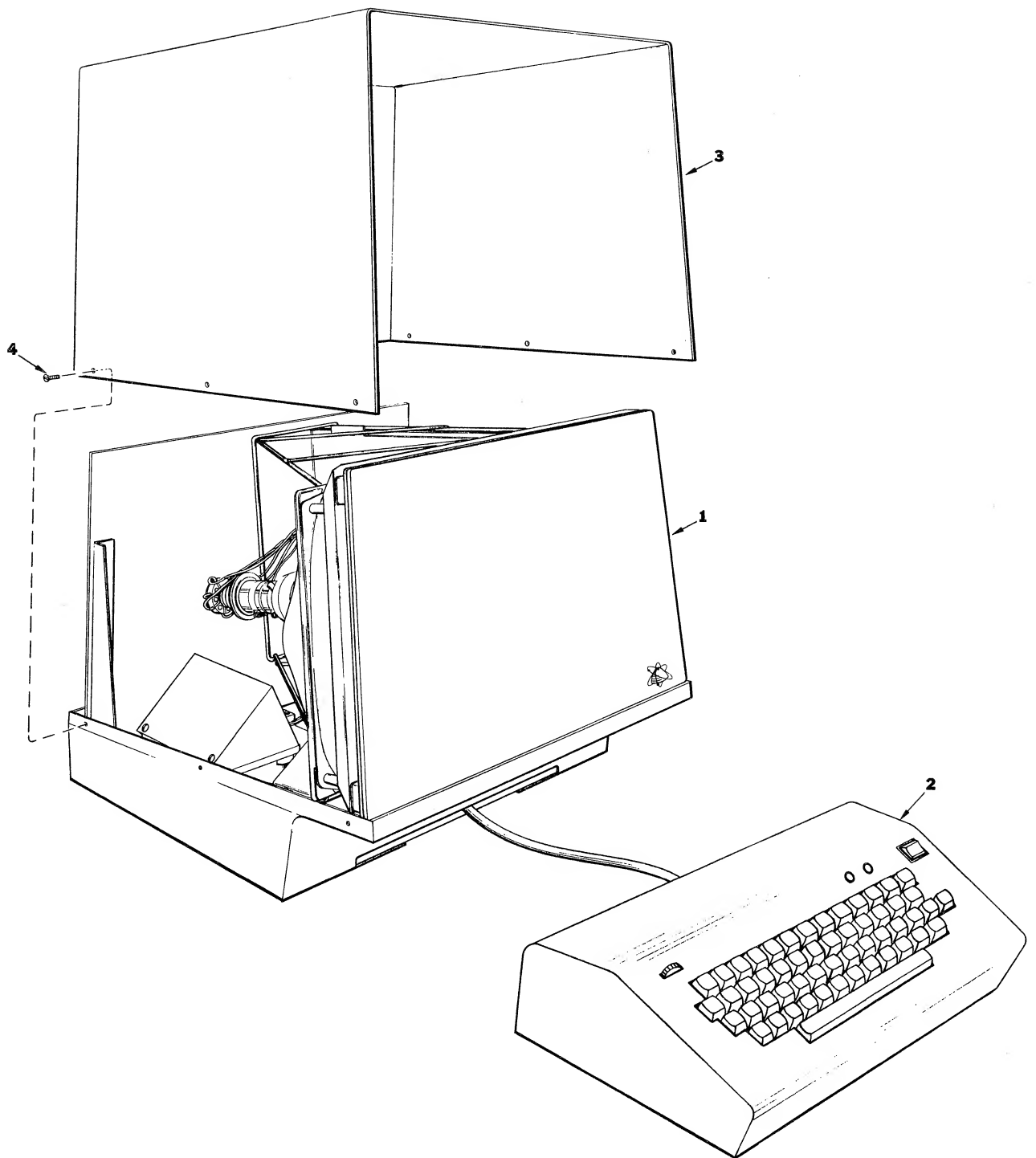


Figure 2-1. Mini Bee Computer Display Terminal, Exploded View





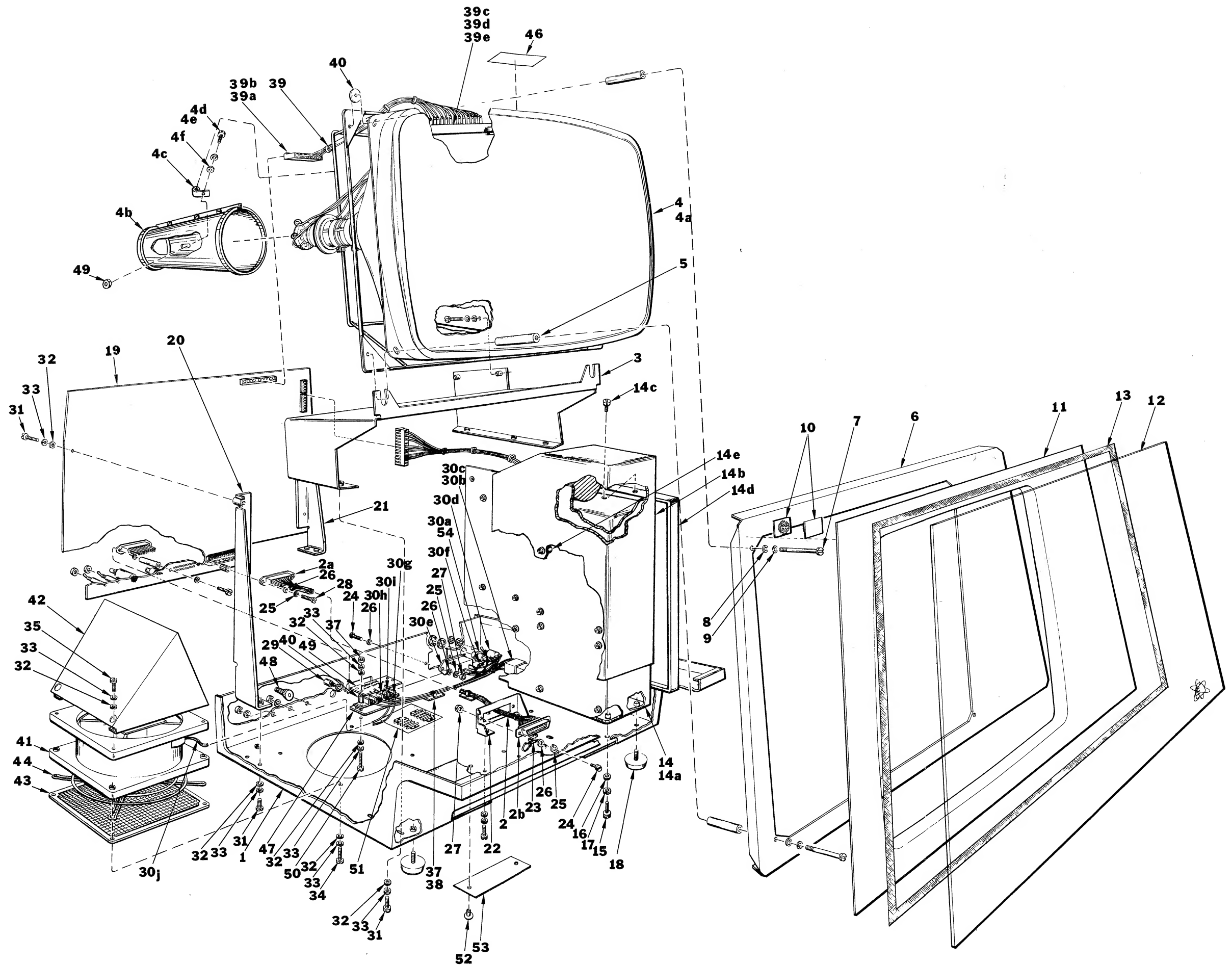


Figure 2-3. Mini Bee Monitor Assembly, Exploded View

CIRCUIT BOARD ASSEMBLY

3-1. INTRODUCTION

3-2. The replaceable parts list and parts location diagram in this section are listed by item reference designation. Items listed in this section are broken down to piece part and component level for reference designation. See table 3-1 for reference designation explanation.

3-3. REPLACEMENT PARTS LIST

3-4. The columns in the reference designation numbered replacement parts list provide the following information for each part.

a. Reference Designation: The assembly designations and complete reference designation for each part, where applicable.

b. Beehive Part Number: The Beehive part number for each replaceable part.

c. QTY: The total QTY of each replaceable part used in the assembly to which it belongs (A/R is used to indicate bulk stored items used only as required).

d. Description: The name or title of each replaceable part.

e. MFR Code: A five digit code that indicates a manufacturer of the replaceable part. The same code number as the manufacturers Federal supply code. See table 3-2 for a list of manufacturers.

f. Manufacturer's Part No.: The manufacturers part number for each replaceable part.

3-5. Parts location diagram for the printed circuit board (figure 3-1) is referenced to the replacement parts list by reference designation. The assembly and subassembly reference designation for the circuit board is 1A1A1, only individual component reference designations are shown on the location diagram.

3-6. TABLES

a. Table 3-2: This table cross references the reference designation from class designation letter to item name.

b. Table 3-3: This table is a cross reference from manufacturers code number, per Federal supply code for manufacturers cataloging handbooks H4-1 and H4-2, to the manufacturers name and location.

3-7. ORDERING PARTS

3-8. Most parts contained in the terminal are available commercially from electronic parts outlets. When it is necessary to order spare or replacement parts from B.M.E.I., include the parts description, part number, model and serial number data of the monitor as listed on the serial number plate and, if applicable, the part reference designation number. Orders for these parts should be sent to:

Beehive Medical Electronics Inc.
870 West 2600 South
Salt Lake City, Utah 84119

For emergency service contact Field Service
Telephone: Area Code (801) 487-0741 or
Teletype Area (910) 925-5271



TABLE 3-1: 1A1A1 MINI-BEE 12/25 LINE BOARD 112-0455

Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1A1A1C1	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C2	624-GBOO-106K	1	Capacitor, Tant - 10uf, 20V	56289	150D106X9020B2
1A1A1C3	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C4	620-KIDO-104P	1	Capacitor, Disc - .1 uf, 50V	56289	7C023104D8500D
1A1A1C5	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C6	620-UCOO-202M	1	Capacitor, Disc - .002uf, 1KV	56289	5GA-D20
1A1A1C7	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C8	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C9	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C10	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C11	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C 12	620-NBOO-103M	1	Capacitor, Disc - .01uf, 100V	56289	TG-S30
1A1A1C 13	624-BBOO-476K	1	Capacitor, Tant - 47uf, 6V	56289	150D476X9006B2
1A1A1C 14	624-BBOO-476K	1	Capacitor, Tant - 47uf, 6V	56289	150D476X9006B2
1A1A1C 15	624-BBOO-476K	1	Capacitor, Tant - 47uf, 6V	56289	150D476X9006B2
1A1A1C 16	624-GBOO-106K	1	Capacitor, Tant - 10uf, 20V	56289	150D106X9020B2
1A1A1C 17	620-UBOO-102M	1	Capacitor, Disc - .001uf, 1KV	56289	5AG-D10
1A1A1C 18	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C 19	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C20	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C21	624-BBOO-476K	1	Capacitor, Tant - 47uf, 6V	56289	150D476X9006B2
1A1A1C22	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C23	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C24	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C25	620-UBOO-221M	1	Capacitor, Disc - 220pf, 1KV	56289	5GA-T22
1A1A1C26	624-GROO-476M	1	Capacitor, Tant - 47 uf, 20V	56289	150D476X9020R2
1A1A1C27	624-GROO-476M	1	Capacitor, Tant - 47 uf, 20V	56289	150D476X9020R2
1A1A1C28	624-GROO-476M	1	Capacitor, Tant - 47uf, 20V	56289	150D476X9020R2
1A1A1C29	620-UCOO-202M	1	Capacitor, Disc - .002uf, 1KV	56289	5GA-D20
1A1A1C30	620-UBOO-102M	1	Capacitor, Disc - .001uf, 1KV	56289	5GA-D10
1A1A1C31	620-UBOO-102M	1	Capacitor, Disc - .001uf, 1KV	56289	5GA-D10
1A1A1C32	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C33	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C34	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C35	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C36	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C37	620-UBOO-191M	1	Capacitor, Disc - 100pf, 1KV	56289	5GA-T10
1A1A1C38	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C39	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C40	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C42	624-GBOO-106K	1	Capacitor, Tant - 10uf, 20V	56289	150D106X9020B2
1A1A1C43	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C46	624-GBOO-106K	1	Capacitor, Tant - 10uf, 20V	56289	150D106X9020B2
1A1A1C47	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C48	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C49	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C50	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D

TABLE 3-1: 1A1A1 MINI-BEE 12/25 LINE BOARD 112-0455 (cont.)

Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1A1A1C51	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C52	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C53	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C54	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C55	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C56	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C57	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C58	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C59	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C60	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C61	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C63	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C64	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C65	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C66	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C67	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C68	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C69	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C70	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C71	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C72	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C73	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C74	620-UBOO-101M	1	Capacitor, Disc - 100pf, 1KV	56289	5GA-T10
1A1A1C75	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56290	7C023104D8500D
1A1A1C76	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C77	620-KIDO-104P	1	Capacitor, Disc - .1uf, 50V	56289	7C023104D8500D
1A1A1C78	620-UCOO-202M	1	Capacitor, Disc - .002uf, 1KV	56289	5GA-D20
1A1A1Y1	603-3001-1689	1	Crystal 11.3400 MHZ	52541	
	801-0200-20	A/R	Wire, Solid Buss #20 Awg	---	
1A1A1Y2	603-3000-1134	1	Crystal 1.689600 MHZ	52541	
	801-0200-20	A/R	Wire, Solid Buss #20 Awg	---	
1A1A1XY2	802-0502-9122	A/R	Tape, Neoprene	26066	Y 9122
1A1A1J1	606-0017-256S	1	Connector, 25 Socket	13511	17-80250-10-02
1A1A1XJ1	606-9203	2	Connector Post	71468	20418-2
1A1A1XJ1	703-0120-206	2	Standoff (Male-Female) #4-40x3/16 LG	06540	9723-B-0440
	701-0002-04	2	Nut, Self Locking #4-40 NC	---	
	701-0003-04	2	Washer, Flat #4	---	
1A1A1J2	606-0017-256S	1	Connector, 25 Socket	13511	17-80250-19-02
1A1A1XJ2	703-0113-420S	2	Spacer	06540	8158-SS-0440
	701-0007-013	2	Screw Pan HD #4-40NC x 1/4 LG	---	
	703-0003-04	2	Washer, Flat #4	---	

TABLE 3-1: 1A1A1 MINI-BEE 12/25 LINE BOARD 112-0455 (cont.)

Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1A1A1P4-1	606-0081-0441	1	Connector Wafer - 4 Pin	27264	09-65-1041
1A1A1P4-2	606-0081-0661	1	Connector Wafer - 6 Pin	27264	09-65-1061
1A1A1P5-1	606-0081-0441	1	Connector Wafer - 4 Pin	27264	09-65-1041
1A1A1P5-2	606-0081-0661	1	Connector Wafer - 6 Pin	27264	09-65-1061
1A1A1A1	604-740D-00	1	I.C., Quad 2-Input Pos Nand Gate	01295	SN-7400N
1A1A1A2	604-740D-08	1	I.C., Quad 2-Input Pos and Gate	01295	SN 7408N
1A1A1A3	604-Y00B-02	1	I.C., U.A.R.T.	52541	TR 1402A
1A1A1A6	604-740D-06	1	I.C., Quad 2-Input Pos Nor Gate	01295	SN 7402N
1A1A1A7	604-740D-10	1	I.C., Triple 3 Input Pos Nand Gate	01295	SN 7410N
1A1A1A8	604-140E89	1	I.C., RS232 Receiver	04713	1489
1A1A1A9	604-740S-163	1	I.C., Synchronous 4-Bit Counter	01295	SN74163N
1A1A1A10	604-740D-93	1	I.C., 4-Bit Binary Counter	01295	SN7493N
1A1A1A11	604-740D-93	1	I.C., 4-Bit Binary Counter	01295	SN7493N
1A1A1A12	604-740D-00	1	I.C., Quad 2-Input Pos Nand Gate	01295	SN7400N
1A1A1A13	604-740S-123	1	I.C. Retriggerable Monostable Multivibrator with Clear	01295	SN74123N
1A1A1A14	604-740D-00	1	I.C. Quad 2-Input Pos Nand Gate	01295	SN 7400N
1A1A1A15	604-740D-10	1	I.C. Triple 3-Input Pos Nand Gate	01295	SN 7410N
1A1A1A19	604-7400D-08	1	I.C. Quadruple 2-Input Pos and Gate	01295	SN 7408N
1A1A1A20	604-7400D-08	1	I. C. Quadruple 2-Input Pos and Gate	01295	SN 7408N
1A1A1A21	604-740S-42	1	I.C. 4-Line-to-10-Line Decoders (1 of 10)	01295	SN 7442N
1A1A1A22	604-740D-04	1	I.C. Hex Inverter	01295	SN 7404N
1A1A1A24	604-740D-00	1	I.C. Quad 2-Input Pos Nand Gate	01295	SN 7400N
1A1A1A25	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A26	604-740D-10	1	I.C. Triple 3-Input Pos Nand Gate	01295	SN 7410N
1A1A1A27	604-140E-88	1	I.C. RS232 - Transmitter	04713	1488
1A1A1A28	604-140A-89	1	I.C. RS232 Receiver	04713	1489
1A1A1A29	604-740S-123	1	I.C. Retriggerable Monostable Multivibrator with Clear	01295	SN 74123N
1A1A1A30	604-740S-123	1	I.C. Retriggerable Monostable Multivibrator with Clear	01295	SN 74123N
1A1A1A31	604-740D-74	1	I.C. Dual-D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A32	604-740S-42	1	I.C. 4-Line-to-10-Line Decoders (1 of 10)	01295	SN 7442N
1A1A1A33	604-740S-42	1	I.C. 4-Line-to-10-Line Decoders (1 of 10)	01295	SN 7442N
1A1A1A34	604-740D-02	1	I.C. Quadruple 2-Input Pos Nor Gate	01295	SN 7402N
1A1A1A35	604-740D-02	1	I.C. Quadruple 2-Input Pos Nor Gate	01295	SN 7402N
1A1A1A36	604-740D-02	1	I.C. Quadruple 2-Input Pos Nor Gate	01295	SN 7402N
1A1A1A37	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A38	604-740D-04	1	I.C. Hex Inverter	01295	SN 7404N
1A1A1A39	604-740D-04	1	I.C. Hex Inverter	01295	SN 7404N

TABLE 3-1: 1A1A1 MINI-BEE 12/25 LINE BOARD 112-0455 (cont.)

Reference Designation	Beehive Part No.	Qty	Description	Mfr. Code	Manufacturer Part No.
1A1A1A40	604-740S-163	1	I.C. Synchronous 4-Bit Counter	01295	SN 74163N
1A1A1A41	604-740S-163	1	I.C. Synchronous 4-Bit Counter	01295	SN 74163N
1A1A1A42	604-740S-163	1	I.C. Synchronous 4-Bit Counter	01295	SN 74163N
1A1A1A43	604-7400D-08	1	I.C. Quadruple 2-Input Pos and Gate	01295	SN 7408N
1A1A1A44	604-740D-00	1	I.C. Quadruple 2-Input Pos Nand Gate	01295	SN 7400N
1A1A1A45	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A46	604-740D-00	1	I.C. Quadruple 2-Input Pos Nand Gate	01295	SN 7400N
1A1A1A47	604-740D-00	1	I.C. Quadruple 2-Input Pos Nand Gate	01295	SN 7400N
1A1A1A48	604-740D-00	1	I.C. Quadruple 2-Input Pos Nand Gate	01295	SN 7400N
1A1A1A49	604-740D-00	1	I.C. Quadruple 2-Input Pos Nand Gate	01295	SN 7400N
1A1A1A50	604-7400D-08	1	I.C. Quadruple 2-Input Pos and Gate	01295	SN 7408N
1A1A1A51	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A52	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A53	604-7400D-08	1	I.C. Quadruple 2-Input Pos and Gate	01295	SN 7408N
1A1A1A54	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A55	604-740D-00	1	I.C. Quadruple 2-Input Pos Nand Gate	01295	SN 7400N
1A1A1A56	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A57	604-740D-00	1	I.C. Quadruple 2-Input Pos Nand Gate	01295	SN 7400N
1A1A1A58	604-740D-20	1	I.C. Dual 4-Input Pos Nand Gate	01295	SN 7420N
1A1A1A59	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A60	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A61	604-740D-00	1	I.C. Quadruple 2-Input Pos Nand Gate	01295	SN 7400N
1A1A1A62	604-740D-04	1	I.C. Hex Inverter	01295	SN 7404N
1A1A1A63	604-740D-00	1	I.C. Quadruple 2-Input Pos Nand Gate	01295	SN7400N
1A1A1A64	604-740D-00	1	I.C. Quadruple 2-Input Pos Nand Gate	01295	SN7400N
1A1A1A65	604-740D-00	1	I.C. Quadruple 2-Input Pos Nand Gate	01295	SN 7400N
1A1A1A66	604-740D-04	1	I.C. Hex Inverter	01295	SN 7404N
1A1A1A67	604-740D-10	1	I.C. Triple 3-Input Nand Gate	01295	SN 7410N
1A1A1A68	604-740D-164	1	I.C. 8-Bit Parallel Out Serial Shift Register	01295	SN 74164N
1A1A1A69	604-740S-162	1	I.C. Synchronous 4-Bit Counters	01295	SN 74162N
1A1A1A70	604-740S-162	1	I.C. Synchronous 4-Bit Counters	01295	SN 74162N
1A1A1A71	604-740S-162	1	I.C. Synchronous 4-Bit Counters	01295	SN 74162N
1A1A1A72	604-740S-163	1	I.C. Synchronous 4-Bit Counters	01295	SN 74163N
1A1A1A73	604-7400D-00	1	I.C. Quadruple 2-Input Nand Gate	01295	SN 7400N
1A1A1A74	604-740S-193	1	I.C. Synchronous 4-Bit Up/Down Counter (Dual Clock with Clear)	01295	SN 74193N
1A1A1A75	604-740S-192	1	I.C. Synchronous 4-Bit Up/Down Counter (Dual Clock with Clear)	01295	SN74192N
1A1A1A76	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip Flop	01295	SN 7474N

TABLE 3-1: 1A1A1 MINI-BEE 12/25 LINE BOARD 112-0455 (cont.)

Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1A1A1A77	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A78	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A80	604-7400D-08	1	I.C. Quadruple 2-Input Pos and Gate	01295	SN 7408N
1A1A1A81	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A82	604-740D-00	1	I.C. Quadruple 2-Input Nand Gate	01295	SN 7400N
1A1A1A83	604-740S-163	1	I.C. Synchronous 4-Bit Counter	01295	SN 74163N
1A1A1A84	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A85	604-740D-00	1	I.C. Quadruple 2-Input Nand Gate	01295	SN 7400N
1A1A1A86	604-740S-162	1	I.C. Synchronous 4-Bit Counters	01295	SN 74162N
1A1A1A87	604-740D-02	1	I.C. Quadruple 2-Input Pos Nor Gate	01295	SN 7402N
1A1A1A88	604-740D-20	1	I.C. Dual 4-Input Pos Nand Gate	01295	SN 7420N
1A1A1A89	604-740D-00	1	I.C. Quadruple 2-Input Nand Gate	01295	SN 7400N
1A1A1A90	604-740S-193	1	I.C. Synchronous 4-Bit Up/Down Counters (Dual Clock with Clear)	01295	SN 74193N
1A1A1A91			Variable		
1A1A1A92			Variable		
A92MP1	703-0008-0482	1	Heat Sink	90372	213AB
	805-0007	A/R	Epoxy Glue	---	
1A1A1A93	604-4001-26	1	I.C. Dual Clock Driver	12040	MH 0026
93MP1	703-0008-13AB	1	Heat Sink	90372	213AB
	805-0007	A/R	Epoxy Glue	---	
1A1A1A94	604-740S-166	1	I.C. 8-Bit Shift Register	01295	SN 74166N
1A1A1A95	604-250U-13	1	I.C. Upper Case Char. Gen.	18324	2513/CM2140
1A1A1A96	604-GOOF-07	1	I.C. Quad 80 Bit Shift Reg.	50088	MK 1007P
1A1A1A97	604-GOOF-07	1	I.C. Quad 80 Bit Shift Reg.	50088	MK 1007P
1A1A1A98	604-740S-162	1	I.C. Synchronous 4-Bit Counter	01295	SN 74162N
1A1A1A99	604-740S-162	1	I.C. Synchronous 4-Bit Counter	01295	SN 74162N
1A1A1A100	604-740S-85	1	I.C. 4-Bit Magnitude Comparator	01295	SN 7485N
1A1A1A101	604-700D-30	1	I.C. 8-Input Pos Nand Gate	01295	SN 7430N
1A1A1A102	604-740S-85	1	I.C. 4-Bit Magnitude Comparator	01295	SN 7485N
1A1A1A103	604-740D-20	1	I.C. Dual 4-Input Pos Nand Gate	01295	SN 7420N
1A1A1A105			Variable		
1A1A1A106			Variable		
1A1A1A107			Variable		
1A1A1A108			Variable		
1A1A1A109			Variable		
1A1A1A110			Variable		
1A1A1A111	604-7400D-08	1	I.C. Quadruple 2-Input Pos and Gate	01295	SN 7408N
1A1A1A112	604-7400D-08	1	I.C. Quadruple 2-Input Pos and Gate	01295	SN 7408N
1A1A1A113	604-740D-00	1	I.C. Quadruple 2-Input Nand Gate	01295	SN 7400N

TABLE 3-1: 1A1A1 MINI-BEE 12/25 LINE BOARD 112-0455 (cont.)

Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1A1A1A114	604-740S-163	1	I.C. Synchronous 4-Bit Counter	01295	SN 74163N
1A1A1A115	604-740S-85	1	I.C. 4-Bit Magnitude Comparator	01295	SN 7485N
1A1A1A116	604-740S-163	1	I.C. Synchronous 4-Bit Counter	01295	SN 74163N
1A1A1A117	604-740S-85	1	I.C. 4-Bit Magnitude Comparator	01295	SN 7485N
1A1A1A118	604-7400-20	1	I.C. Dual 4-Input Pos Nand Gate	01295	SN 7420N
1A1A1A119	604-030K-20	1	I.C. - 5V Regulator	12040	LM 320
	805-0101	A/R	Silicone Grease	80112	8101
	703-0009-05	1	Heat Sink Base	13103	6103
	701-0007-015S	2	Screw, Pan Head #4-40 3/8 Lg.	---	
	701-0003-04	2	Washer, Flat #4	---	
	701-0002-04	2	Nut, Self-Locking #4-40	---	
1A1A1A120	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A121	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A122	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A123	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34669	1404A
1A1A1A124	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A125	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A126	604-740S-123	1	I.C. Dual One-Shot	01295	SN 74123
1A1A1A127	604-740S-123	1	I.C. Dual One-Shot	01295	SN 74123
1A1A1A128	604-740D-04	1	I.C. Hex Inverter	01295	SN 7410N
1A1A1A129	604-740D-02	1	I.C. Quadruple 2-Input Pos Nor Gate	01295	SN 7402N
1A1A1A130	604-740D-74	1	I.C. Dual D-Type Edge-Triggered Flip-Flop	01295	SN 7474N
1A1A1A131	604-740D-00	1	I.C. Quadruple 2-Input Nand Gate	01295	SN 7400N
1A1A1A132	604-740D-00	1	I.C. Quadruple 2-Input Nand Gate	01295	SN 7400N
1A1A1A133	604-740D-10	1	I.C. Triple 3-Input Pos Nand Gate	01295	SN 7410N
1A1A1A134	604-740D-02	1	I.C. Quadruple 2-Input Pos Nor Gate	01295	SN 7402N
1A1A1R1	6RC-07GF-202	1	Resistor - 2K, 1/4W, 5%	81349	RC07GF202J
1A1A1R2	6RC-07GF-101	1	Resistor - 100 ohms, 1/4W, 5%	81349	RC07GF101J
1A1A1R3	6RC-07GF-202	1	Resistor - 2K, 1/4W, 5%	81349	RC07GF202J
1A1A1R4	6RC-07GF-202	1	Resistor - 2K, 1/4W, 5%	81349	RC07GF202J
1A1A1R5	6RC-07GF-202	1	Resistor - 2K, 1/4W, 5%	81349	RC07GF202J
1A1A1R6	6RC-07GF-220	1	Resistor - 22 ohms, 1/4W, 5%	81349	RC07GF220J
1A1A1R7	6RC-07GF-202	1	Resistor - 2K, 1/4W, 5%	81349	RC07GF202J
1A1A1R8	6RC-07GF-202	1	Resistor - 2K, 1/4W, 5%	81349	RC07GF202J
1A1A1R9	6RC-07GF-202	1	Resistor - 2K, 1/4W, 5%	81349	RC07GF202J
1A1A1R10	6RC-07GF-202	1	Resistor - 2K, 1/4W, 5%	81349	RC07GF202J
1A1A1R11	6RC-07GF-202	1	Resistor - 2K, 1/4W, 5%	81349	RC07GF202J
1A1A1R12	6RC-07GF-203	1	Resistor - 20K, 1/4W, 5%	81349	RC07GF203J
1A1A1R13	6RC-07GF-153	1	Resistor - 15K, 1/4W, 5%	81349	RC07GF153J
1A1A1R14	6RC-07GF-202	1	Resistor - 2K, 1/4W, 5%	81349	RC07GF202J
1A1A1R15	6RC-07GF-472	1	Resistor - 4.7K, 1/4W, 5%	81349	RC07GF472J

TABLE 3-1: 1A1A1 MINI-BEE 12/25 LINE BOARD 112-0455 (cont.)

Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1A1A1R16	6RC-07GF-102	1	Resistor - 1K, $\frac{1}{4}$ W, 5%	81349	RC07GF102J
1A1A1R17	6RC-07GF-101	1	Resistor - 100 ohms, $\frac{1}{4}$ W, 5%	81349	RC07GF101J
1A1A1R18	6RC-07GF-301	1	Resistor - 300 ohms, $\frac{1}{4}$ W, 5%	81349	RC07GF301J
1A1A1R19	6RC-07GF-203	1	Resistor - 20K, $\frac{1}{4}$ W, 5%	81349	RC07GF203J
1A1A1R20	6RC-07GF-512	1	Resistor - 5.1K, $\frac{1}{4}$ W, 5%	81349	RC07GF512J
1A1A1R21	6RC-07GF-203	1	Resistor - 20K, $\frac{1}{4}$ W, 5%	81349	RC07GF203J
1A1A1R22	6RC-07GF-512	1	Resistor - 5.1K, $\frac{1}{4}$ W, 5%	81349	RC07GF512J
1A1A1R23	6RC-07GF-102	1	Resistor - 1K, $\frac{1}{4}$ W, 5%	81349	RC07GF102J
1A1A1R24	6RC-07GF-472	1	Resistor - 4.7K, $\frac{1}{4}$ W, 5%	81349	RC07GF472J
1A1A1R25	6RC-07GF-392	1	Resistor - 3.9K, $\frac{1}{4}$ W, 5%	81349	RC07GF392J
1A1A1R26	6RC-07GF-301	1	Resistor - 300 ohms, $\frac{1}{4}$ W, 5%	81349	RC07GF301J
1A1A1R27	6RC-07GF-101	1	Resistor - 100 ohms, $\frac{1}{4}$ W, 5%	81349	RC07GF101J
1A1A1R28	6RC-07GF-101	1	Resistor - 100 ohms, $\frac{1}{4}$ W, 5%	81349	RC07GF101J
1A1A1R29	6RC-07GF-202	1	Resistor - 2K, $\frac{1}{4}$ W, 5%	81349	RC07GF202J
1A1A1R30	6RC-07GF-202	1	Resistor - 2K, $\frac{1}{4}$ W, 5%	81349	RC07GF202J
1A1A1R31	6RC-07GF-202	1	Resistor - 2K, $\frac{1}{4}$ W, 5%	81349	RC07GF202J
1A1A1R32	6RC-07GF-202	1	Resistor - 2K, $\frac{1}{4}$ W, 5%	81349	RC07GF202J
1A1A1R33	6RC-07GF-102	1	Resistor - 1K, $\frac{1}{4}$ W, 5%	81349	RC07GF102J
1A1A1R34	6RC-07GF-102	1	Resistor - 1K, $\frac{1}{4}$ W, 5%	81349	RC07GF102J
1A1A1R35	6RC-07GF-202	1	Resistor - 2 K, $\frac{1}{4}$ W, 5%	81349	RC07GF202J
1A1A1R36			Variable		
1A1A1R37			Variable		
1A1A1R38	6RC-07GF-220	1	Resistor - 22 ohms, $\frac{1}{4}$ W, 5%	81349	RC07GF220J
1A1A1R39	6RC-07GF-220	1	Resistor - 22 ohms, $\frac{1}{4}$ W, 5%	81349	RC07GF220J
1A1A1R40	6RC-07GF-302	1	Resistor - 3K, $\frac{1}{4}$ W, 5%	81349	RC07GF302J
1A1A1R41	6RC-07GF-302	1	Resistor - 3K, $\frac{1}{4}$ W, 5%	81349	RC07GF302J
1A1A1R42	6RC-07GF-302	1	Resistor - 3K, $\frac{1}{4}$ W, 5%	81349	RC07GF302J
1A1A1R43	6RC-07GF-302	1	Resistor - 3K, $\frac{1}{4}$ W, 5%	81349	RC07GF302J
1A1A1R45	6RC-07GF-302	1	Resistor - 3K, $\frac{1}{4}$ W, 5%	81349	RC07GF302J
1A1A1R46			Variable		
1A1A1R47			Variable		
1A1A1R48			Variable		
1A1A1R49			Variable		
1A1A1R50			Variable		
1A1A1R51			Variable		
1A1A1R52	6RC--7GF-202	1	Resistor - 2K, $\frac{1}{4}$ W, 5%	81349	RC07GF202J
1A1A1R53	6RC-07GF-302	1	Resistor - 3K, $\frac{1}{4}$ W, 5%	81349	RC07GF302J
1A1A1R54	6RC-07GF-302	1	Resistor - 3K, $\frac{1}{4}$ W, 5%	81349	RC07GF302J
1A1A1R55	6RC-07GF-302	1	Resistor - 3K, $\frac{1}{4}$ W, 5%	81349	RC07GF302J
1A1A1R56	6RC-07GF-302	1	Resistor - 3 K, $\frac{1}{4}$ W, 5%	81349	RC07GF302J
1A1A1R57	6RC-07GF-302	1	Resistor - 3K, $\frac{1}{4}$ W, 5%	81349	RC07GF302J
1A1A1R58	6RC-07GF-302	1	Resistor - 3K, $\frac{1}{4}$ W, 5%	81349	RC07GF302J
1A1A1R59	601-1025-501	1	Potentiometer - 500 ohms	80294	3389P-1-501

TABLE 3-1: 1A1A1 MINI-BEE 12/25 LINE BOARD 112-0455 (cont.)

Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1A1A1S1	607-0017-12	1	Rotary Switch	95146	MSRE-1-10
1A1A1S2	607-0018-01	1	Toggle Switch	95146	MSTA 106D
1A1A1S3	607-0018-01	1	Toggle Switch	95146	MSTA 106D
1A1A1LS1	612-0000-214	1	Speaker	07109	23A8C
	802-0502-9122	A/R	Neoprene Tape	26066	Y9122
	805-0004-732	A/R	Silastic Adhesive	71984	732 RTV
	801-0001-0501	A/R	Wire, White #22 Awg. Variable	82879	A3409
1A1A1M1					
1A1A1E1	801-0201-01	1	Buss, Bar PWR & GND	52541	
1A1A1E2	801-0201-01	1	Buss, Bar PWR & GND	52541	
1A1A1E3	801-0201-01	1	Buss, Bar PWR & GND	52541	
1A1A1	112-0456	1	Circuit Board	52541	
1A1A1	112-0455-0001		25 Line Circuit Board		
1A1A1A91			Delete		
1A1A1A92	604-U001-26	1	I.C.	12040	MH 0026
1A1A1A103	604-740D-20	1	I.C. Dual 4-Input Pos Nand Gate	01295	SN 7420N
1A1A1A105	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A106	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A107	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A108	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A109	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A110	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1R36	6RC-07GF-220	1	Resistor 220 ohms, ¼ W, 5%	81349	RC07GF220J
1A1A1R37	6RC-07GF-220	1	Resistor 220 ohms, ¼ W, 5%	81349	RC07GF220J
1A1A1R46	6RC-07GF-472	1	Resistor 4.7 IC, ¼ W, 5%	81349	RC07GF472J
1A1A1R47	6RC-07GF-472	1	Resistor 4.7K, ¼ W, 5%	81349	RC07GF472J
1A1A1R48	6RC-07GF-472	1	Resistor 4.7K, ¼ W, 5%	81349	RC07GF472J
1A1A1R49	6RC-07GF-472	1	Resistor 4.7K, ¼ W, 5%	81349	RC07GF472J
1A1A1R50	6RC-07GF-472	1	Resistor 4.7K, ¼ W, 5%	81349	RC07GF472J
1A1A1R51	6RC-07GF-472	1	Resistor 4.7K, ¼ W, 5%	81349	RC07GF472J
1A1A1M1			Delete		

TABLE 3-1: 1A1A1 MINI-BEE 12/25 LINE BOARD 112-0455 (cont.)

Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1A1A1	112-0455-0002		12 LINE CIRCUIT BOARD		
1A1A1A91	604-740D-20	1	I.C. Dual 4 Input Pos Nand Gate	01295	SN 7420N
1A1A1A92			Delete		
1A1A1A103			Delete		
1A1A1A105			Delete		
1A1A1A106			Delete		
1A1A1A107			Delete		
1A1A1A108			Delete		
1A1A1A109			Delete		
1A1A1A110			Delete		
1A1A1R36			Delete		
1A1A1R37			Delete		
1A1A1R46			Delete		
1A1A1R47			Delete		
1A1A1R48			Delete		
1A1A1R49			Delete		
1A1A1R50			Delete		
1A1A1R51			Delete		
1A1A1M1			Delete		
1A1A1	112-0455-0003		10 Bit Word Parity to Marking State (25 line circuit board)		
1A1A1A91			Delete		
1A1A1A92	604-U001-26	1	I.C.	12040	MH 0026
1A1A1A103	604-740D-20	1	I.C. Dual 4 Input Pos Nand Gate	01295	SN 7420N
1A1A1A105	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1402 A
1A1A1A106	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404 A
1A1A1A107	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404 A
1A1A1A108	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404 A
1A1A1A109	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404 A
1A1A1A110	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404 A
1A1A1R36	6RC-07GF-220	1	Resistor 220 ohms, ¼ W, 5%	81349	RC07GF220J
1A1A1R37	6RC-07GF-220	1	Resistor 220 ohms, ¼ W, 5%	81349	RC07GF220J
1A1A1R46	6RC-07GF-472	1	Resistor 4.7K, ¼ W, 5%	81349	RC07GF472J
1A1A1R47	6RC-07GF-472	1	Resistor 4.7K, ¼ W, 5%	81349	RC07GF472J
1A1A1R48	6RC-07GF-472	1	Resistor 4.7K, ¼ W, 5%	81349	RC07GF472J
1A1A1R49	6RC-07GF-472	1	Resistor 4.7K, ¼ W, 5%	81349	RC07GF472J
1A1A1R50	6RC-07GF-472	1	Resistor 4.7K, ¼ W, 5%	81349	RC07GF472J
1A1A1R51	6RC-07GF-472	1	Resistor 4.7K, ¼ W, 5%	81349	RC07GF472J
1A1A1M1			Delete		

TABLE 3-1: 1A1A1 MINI-BEE 12/25 LINE BOARD 112-0455 (cont.)

Reference Designation	Beehive Part No.	Qty	Description	Mfr. Code	Manufacturer Part No.
1A1A1	112-0455-0004	25	Line Circuit Board with Elapse Time Meter		
1A1A1A91			Delete		
1A1A1A92	604-U001-26	1	I.C.	12040	MH 0026
1A1A1A103	604-740D-20	1	I.C. Dual 4-Input Pos Nand Gate	01295	SN 7420N
1A1A1A105	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A106	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A107	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A108	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A109	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1A110	604-14AD-04	1	I.C. 10-24 Bit Shift Reg.	34649	1404A
1A1A1R36	6RC-07GF-220	1	Resistor 220 ohms, $\frac{1}{4}$ W, 5%	81349	RC07GF220J
1A1A1R37	6RC-07GF-220	1	Resistor 220 ohms, $\frac{1}{4}$ W, 5%	81349	RC07GF220J
1A1A1R46	6RC-07GF-472	1	Resistor 4.7K, $\frac{1}{4}$ W, 5%	81349	RC07GF472J
1A1A1R47	6RC-07GF-472	1	Resistor 4.7K, $\frac{1}{4}$ W, 5%	81349	RC07GF472J
1A1A1R48	6RC-07GF-472	1	Resistor 4.7K, $\frac{1}{4}$ W, 5%	81349	RC07GF472J
1A1A1R49	6RC-07GF-472	1	Resistor 4.7K, $\frac{1}{4}$ W, 5%	81349	RC07GF472J
1A1A1R50	6RC-07GF-472	1	Resistor 4.7K, $\frac{1}{4}$ W, 5%	81349	RC07GF472J
1A1A1R51	6RC-07GF-472	1	Resistor 4.7K, $\frac{1}{4}$ W, 5%	81349	RC07GF472J
1A1A1M1	610-1008-01	1	Elapse Time Meter	18583	A20LC

TABLE 3-2: Printed Circuit Board Reference Designations

REFERENCE DESIGNATIONS			
A=	Assembly, Subassembly, Integrated Circuit	MP=	Misc. Mechanical Part
C=	Capacitor	P=	Connector (Male)
E=	Misc. Electrical Part	R=	Resistor
J=	Connector (Female)	S=	Switch
LS=	Loud Speaker	X=	Securing Device
M=	Meter	Y=	Crystal

TABLE 3-3: Manufacturers code number to name and location.

The following code numbers are from the Federal Supply Code for manufacturers cataloging handbooks H4-1 and H4-2 and the latest supplement.		
Mfr. Code	Manufacturer	Address
01295	Texas Instrument Inc. Semiconductor Components Div.	Dallas, Texas
04713	Motorola Semiconductor Products Inc.	Phoenix, Arizona
06540	Amatom Elect. Hardware Div. of Mite Corporation	New Rochelle, New York
07109	Oaktron Industries Inc.	Monroe, Wis.
12040	National Semiconductor Inc.	Danbury, Conn.
13103	Thermalloy Company	Dallas, Texas
13511	Amphenol Corp. Amphenol Conn. Div.	Los Gatos, Calif.
18324	Signetics Corporation	Sunnyvale, Calif.
18583	Curtis Instrument Co.	Mount Kisco, New York
26066	Minnesota Mining and Mfg. Co. Industrial Tape Div.	St. Paul, Minn.
27264	Molex Products Co.	Donners Grove, Ill.
34649	Intel Corporation	Mt. View, Calif.
50088	Mostek Corporation	Carrollton, Texas
52541	Beehive Medical Elect. Inc.	Salt Lake City, Utah
56289	Sprague Electronics Co.	North Adams, Mass.
71468	ITT Cannon Electronics Inc.	Los Angeles, Calif.
71984	Dow Corning Corp.	Midland, Mich.
80112	G.C. Ele. Co. Div. of Hydrometals Inc.	Los Angeles, Calif.
80294	Bourns Inc.	Riverside, Calif.
81349	Mil. Spec. Part Standardization Manual 4120-3-M	
82879	ITT Wire and Cable Div.	Pawtucket, R.I.
90372	Wakefield Engineering Inc.	Wakefield, Mass.
95146	Alco Electronics Products Inc.	Lawrence, Mass.

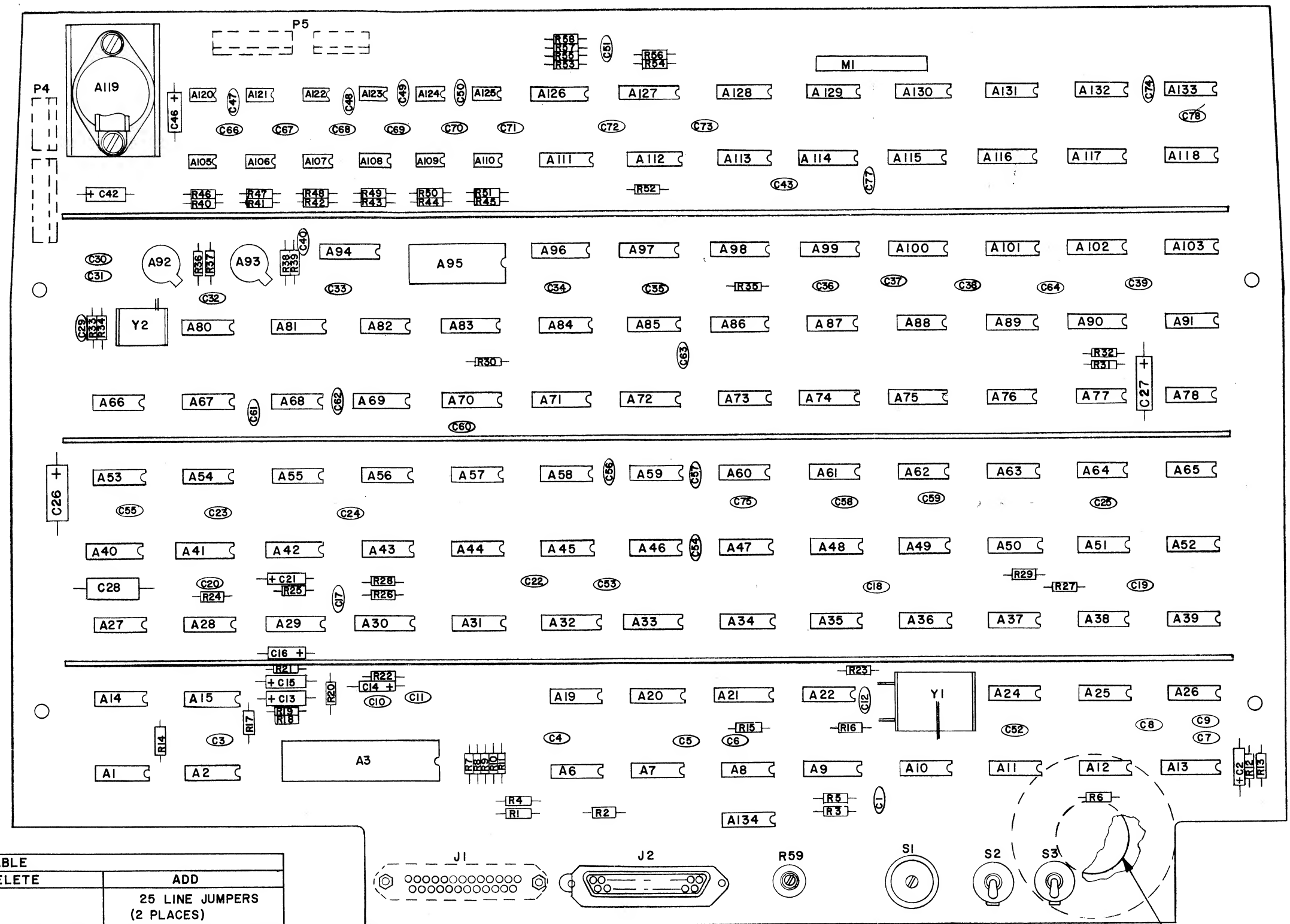


TABLE		
PART NO. & OPTION	DELETE	ADD
112-0455-0001 (25 LINE OPTION)	A91	25 LINE JUMPERS (2 PLACES)
112-0455-0002 (12 LINE OPTION)	A105-A110, A92, A103, R36, R37, R46-R51	JUMPER WIRES BETWEEN PINS 5 & 1 ON A105- A110; 12 LINE JUMPERS (2 PLACES)
112-0455-0003 (25 LINE OPTION WITH 10 BIT WORD PARITY TO MARKING STATE)	COMPONENT SIDE-CUT CONDUCTOR BETWEEN A3 PIN 35 & A3 PIN 38	DIP SIDE - ADD A JUMPER BETWEEN A3 PIN 35 & A3 PIN 34 & 25 LINE JUMPERS
112-0455-0004 (25 LINE OPTION WITH ELAPSED TIME METER)		MI & 25 LINE JUMPERS

Figure 3-1.

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APPENDIX A

A-1. INTRODUCTION

A-2. This appendix contains replaceable parts lists and main chassis board parts location diagram for the Ball Brothers Research Corp. 12" CRT Monitor Number TV-B12 used in the Mini Bee computer display terminal.

A-3. The information supplied in this appendix may change at the discretion of the Seller, Ball Bros. Research Corp.



Table A-1 Replaceable Parts List

SYM	DESCRIPTION	MFG	MFG PART NUMBER	BBRC PART NUMBER
<u>Capacitor, Fixed: μF Unless otherwise stated</u>				
C1	3300; 60V, Electrolytic	BBRC		1-012-2156
C101	0.01; 1000V, Ceramic, Arc Gap	CRL	Type DG-63	1-012-0112
C102	0.01; 1000V, Ceramic, Arc Gap	CRL	Type DG-63	1-012-0112
C103	0.01; 1000V, Ceramic, Arc Gap	CRL	Type DG-63	1-012-0112
C104	0.001 \pm 10%; 1000V, Ceramic Disc	ERIE	Type 801	1-012-0540
C105	0.47 \pm 10%; 100V, Mylar	PAK	MF830	1-012-1005
C106	0.47 \pm 10%; 100V, Mylar	PAK	MF830	1-012-1005
C107	500; 6V, Electrolytic	BBRC		1-012-2158
C108	100; 6V, Electrolytic	BBRC		1-012-2160
C109	0.022 \pm 10%; 400V, Mylar	SPRA	Type 225P	1-012-0800
C110	.1 \pm 10%; 200V, Mylar	PAK	MF580	1-012-0870
C111	0.02 \pm 20%; 1000V, Ceramic Disc	ERIE	Type 841	1-012-0780
C112	50; 50V, Electrolytic	BBRC		1-012-2157
C113	10 \pm 10%, 63V, Mylar	BBRC		1-012-1130
C114	200; 25V, Electrolytic	BBRC		1-012-2159
C115	50; 25V, Electrolytic	BBRC		1-012-2165
C116	20; 150V, Electrolytic	BBRC		1-012-1260
C117	6 μ f; 25V, Electrolytic	SPRA	TE1203	1-012-2066
C118	820pf \pm 5%; 500V, Dipped Mica	ARCO	Type DM	1-012-0482
C119	25; 50V, Electrolytic	BBRC		1-012-2193
C120	.01 \pm 20%; 1000 Ceramic Disc	ERIE	Type 811	1-012-0740
C201	50; 50V, Electrolytic	BBRC		1-012-2157
C202	0.01 \pm 20%; 1000V, Ceramic Disc	ERIE	Type 841	1-012-0780
C203	50; 50V, Electrolytic	BBRC		1-012-2157
CR1	VS148, Bridge Rectifier	VARO	VS148	1-021-0413
CR2	H510, High Voltage Rectifier	VARO	H510	1-021-0424
CR101	1N3605	SYL	1N3605	1-021-0410
CR102	1N3605	SYL	1N3605	1-021-0410
CR103	1N4785	RCA	1N4785	1-021-0360
CR104	1N3279	DI	1N3279	1-021-0380
CR105	1N3279	DI	1N3279	1-021-0380
CR106	1N3279	DI	1N3279	1-021-0380
CR107	1N3279	DI	1N3279	1-021-0380
CR108	1N3605	SYL	1N3605	1-021-0410
F1	Fuse, 0.6A-250V, $\frac{1}{2}$ x 1 $\frac{1}{2}$, Slo-Blo	LF	Type AGC	1-028-0244
or	Fuse, 0.6A-250V, 9/32 x 1 $\frac{1}{2}$, Slo-Blo (TV-B12)	BUSS	Type MDM	1-028-0245
F101	Fuse, 2A-125V, Picofuse	LF	276002	1-028-0247
L1	Vertical Choke (TV5 & 12)	BBRC		6-003-0321
or	Vertical Choke (TV-9)	BBRC		6-003-0352
L101	Coil, Width	BBRC		1-016-0303
<u>TRANSISTOR</u>				
Q1	2N3055	RCA	2N3055	1-015-1134
Q101	2N5830	MOT	2N5830	1-015-1172
Q102	D13T1	GE	D13T1	1-015-1157

APPENDIX A

SYM	DESCRIPTION	MFG	MFG PART NUMBER	BBRC PART NUMBER
<u>TRANSISTOR</u>				
Q103	MPSA14	MOT	MPSA14	1-015-1158
Q104	MJE3055	MOT	MJE3055	1-015-1156
Q105	MPS-U05	MOT	MPS-U05	1-015-1159
Q106	SP2597	MOT	SP2597	1-015-1160
or	MP3731 (DC current gain of 25 minimum at $I_c = 6.0A$ DC, $V_{ce} = 3.0V$ DC)	MOT	MP3731	1-015-1160
Q107	2N4124	MOT	2N4124	1-015-1139
Q201	2N3053	MOT	2N3053	1-015-1143
Q202	2N3903	MOT	2N3903	1-015-1132
Q203	2N3903	MOT	2N3903	1-015-1132
<u>RESISTOR, Film: $\frac{1}{2}W \pm 5\%$ Unless otherwise stated</u>				
R101	2.7K	NPC	Type RBX	1-011-2280
R102	Var; $100K \pm 20\%$; $1/8W$ (Optional)	CTS	Type 201	1-011-5435
R103	82K	NPC	Type RBX	1-011-2316
R104	100K	NPC	Type RBX	1-011-2318
R105	Not Used			
R106	100K	NPC	Type RBX	1-011-2318
R107	Var; $2.5M \pm 20\%$; $1/8W$, Composition	BBRC		1-011-5566
R108	15 Ω , (TV12 W/O Power Supply)			1-011-2226
or	22 Ω , 1W, Composition (TV-C12 only)	AB		1-011-2421
R109	47 Ω			1-011-2238
R110	820 Ω			1-011-2268
R111	47 Ω			1-011-2238
R112	220 Ω			1-011-2254
R113	470 Ω			1-011-2262
R114	150 Ω , (TV9 and TV12)			1-011-2250
or	68 Ω , (TV5)			1-011-2242
R115	82K			1-011-2316
R116	Var; $100K \pm 20\%$; $1/8W$, Composition	BBRC		1-011-5435
R117	4.7K			1-011-2286
R118	8.2K			1-011-2292
R119	100K			1-011-2318
R120	560 Ω			1-011-2264
R121	Var; $10K \pm 20\%$; $1/8W$, Composition	BBRC		1-011-5312
R122	4.7K			1-011-2250
R123	150 Ω			1-011-2250
R124	Var; $100\Omega \pm 20\%$; $1/8W$, Composition	BBRC		1-011-5095
R125	3.3 $\Omega \pm 10\%$; 2W, Wirewound	IRC	Type BHW	1-011-1571
R126	390 Ω			1-011-2260
R127	470 Ω			1-011-2262
R128	2.7K			1-011-2280
R129	5.6 Ω			1-011-2218
R130	1.2 $\Omega \pm 10\%$; 3W, Wirewound	IRC	Type BHW	1-011-1395
R131	3.3K			1-011-2282
R132	82 $\Omega \pm 10\%$; 3W, Wirewound	SPRA	Type 242 E	1-011-2375

SYM	DESCRIPTION	MFG	MFG PART NUMBER	BBRC PART NUMBER
	<u>RESISTOR, Film: $\frac{1}{2}$W +5% Unless otherwise stated</u>			
R133	4.7K; $\frac{1}{2}$ W			70-16-0472
R134	Not Used			
R135	22K			70-16-0223
R136	22K			70-16-0223
R137	33K; 1W Composition			1-011-2448
R201	1K			1-011-2270
R202	1K			1-011-2270
R203	10K			1-011-2294
R204	0.68 Ω \pm 10%; 2W, Wirewound	IRC	Type BHW	1-011-2217
R205	1.5K			1-011-2274
R206	470 Ω			1-011-2262
R207	470 Ω			1-011-2262
R208	Var; 500 Ω \pm 20%; 1/5W, Composition	CTS	Type 201	1-011-5604
R209	470 Ω			1-011-2262
	<u>TRANSFORMER</u>			
T1	Power	BBRC		1-017-5390
T2	High Voltage (TV-12C, TV-A12, & TV-E12)	BBRC		6-003-0320
	or High Voltage (TV-B12, TV-TC12, & TV-C12)	BBRC		6-003-0325
	or High Voltage (TV-T12)	BBRC		6-003-0326
	or High Voltage (5 inch CRT)	BBRC		6-003-0328
	or High Voltage (TV-D12)	BBRC		6-003-0333
	or High Voltage (TV-9)	BBRC		6-003-0348
T101	Horizontal Driver	BBRC		1-017-5338
VR101	1N758	T1	1N758	1-021-0180
VR102	VR56	ST	VR56	1-021-0420
	<u>MISCELLANEOUS</u>			
	Socket, CRT (TV12)	BBRC		1-022-0427
	Socket, CRT (TV5)	BBRC		1-022-0430
	Fuseholder, Extractor Post, Fuse Size: $\frac{1}{4}$ x $1\frac{1}{4}$	LF	342012	1-028-0210
	Fuseholder, Extractor Post, Fuse Size: 9/32 x $1\frac{1}{4}$ (TV-B12 Only)	BUSS	Type HCM	1-028-0246
	Low Voltage Circuit Board Assembly	BBRC		6-003-0459
	Main Chassis Circuit Board Assembly (TV12, TV-B12, TV-A12, TV-E12 and TV-D12)	BBRC		6-003-0500
	Main Chassis Circuit Board Assembly (TV-A5)	BBRC		6-002-0475
	Main Chassis Circuit Board Assembly (TV-T12)	BBRC		6-002-0476
	Main Chassis Circuit Board Assembly (TV-TC12)	BBRC		6-002-0502
	Main Chassis Circuit Board Assembly (TV-5)	BBRC		6-003-0501
	Main Chassis Circuit Board Assembly (TV-C12)	BBRC		6-002-0504
	Main Chassis Circuit Board Assembly (TV12, Tektronics)	BBRC		6-002-0506
	Main Chassis Circuit Board Assembly (TV-9)	BBRC		6-002-0505
	Cable Assembly; 8 Inch	BBRC		6-004-0630
	Cable Assembly; 5 Inch	BBRC		6-004-0631
	Power Supply Module (TV-12, 120VAC)	BBRC		6-003-0371
	Power Supply Module (TV-12, 220VAC)	BBRC		6-003-0372
	Power Supply Module (TV-9, 120VAC)	BBRC		6-003-0369
	Power Supply Module (TV-B12, 120VAC)	BBRC		6-003-0368

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SYM	DESCRIPTION	MFG	MFG	BBRC
			PART NUMBER	PART NUMBER
	<u>MISCELLANEOUS</u>			
	Power Supply Module (TV-B12, 220VAC)	BBRC		6-002-0370
	Power Supply Module (TV-9, 220VAC)	BBRC		6-002-0376
	Deflection Coil Assembly (TV12 & 5)	BBRC		6-004-0314
	Deflection Coil Assembly (TV-B12)	BBRC		6-004-0321
	Deflection Coil Assembly (TV-9)	BBRC		6-004-0325
V1	CRT, 12 Inch, P4 Phosphor	BBRC		1-014-0737
or	CRT, 12 Inch, P39 Phosphor	BBRC		1-014-0738
or	CRT, 5 Inch, P4 Phosphor	BBRC		1-014-0725
or	CRT, 9 Inch, P4 Phosphor	BBRC		1-014-0748
	Power Cable Assembly, 120VAC	BBRC		6-003-0645
	Power Cable Assembly, 220VAC	BBRC		6-003-0652

Table A-2 Vendor Codes and Locations

<u>CODE</u>	<u>MANUFACTURER</u>	<u>LOCATION</u>
BBRC	Ball Brothers Research Corporation Miratel Division	Roseville, MN
BUSS	Bussman Manufacturing	St. Louis, MO
CRL	Centralab	Milwaukee, WI
CTS	CTS Corporation	Elkhart, IN
DI	Diode, Inc.	Chatsworth, CA
ERIE	Erie Technological Products Inc.	Erie, PA
GE	General Electric	Syracuse, NY
IRC	IRC Corporation	Philadelphia, PA
LF	Littelfuse Co., Inc.	Des Plaines, IL
MALL	P.R. Mallory Co., Inc.	Indianapolis, IN
MOT	Motorola Semiconductor Products	Phoenix, AZ
NPC	Neucleonics Products	Los Angeles, CA
PAK	Paktron	Alexandria, VA
RCA	RCA Semiconductor Division	Harrison, NJ
SPRA	Sprague Electric Co.	North Adams, MA
ST	Sarkes Tarzian Inc.	Bloomington, IN
SYL	Sylvania Electric Products	Seneca Falls, NY
TI	Texas Instrument	Dallas, TX
VARO	Varo Corporation	Garland, TX





Fig. 1 Circuit Board Components Location



ORDERING PARTS

A4

Most parts contained in the monitor are available commercially from electronic parts outlets. When it is necessary to order spare or replacement parts from BBRC, Miratel Division, include the part description, part number, model and serial number data of the monitor as listed on the serial number plate and, if applicable, the schematic reference number listed in the parts list. Orders for these parts should be sent to:

Ball Brothers Research Corporation
Miratel Division
1633 Terrace Drive
Roseville, Minnesota 55113

For rapid service:

Telephone area (612) 633-1742
or
Teletype area (910) 563-3552



APPENDIX B

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B-1 Introduction

B-2 This appendix contains replaceable parts lists and parts location diagrams for the Elexon, 100W, 3 Output, Power Supply number 10130, Beehive part number 610-0318

B-3 This Power Supply is purchased from Elexon by Beehive Medical Electronics, Inc. and may be revised by the supplier at his discretion. This appendix will be updated as these changes are noted by B.M.E.I.

B-4 Replaceable Parts List and Location Diagrams

B-5 The parts lists and location diagrams found in this appendix are cross referenced and listed by item number and, or, reference designation. (See table B-5)

B-6 Ordering Parts

B-7 Most parts contained in this Power Supply are available commercially from electrical parts outlets

- a- When it is necessary to order parts from Beehive Medical Electronics include the part description and Beehive part number. Order these parts from Beehive Medical Electronics, Inc.
870 West 2600 South
Salt Lake City, Utah 84119
- b- When the Beehive part number is not shown it will be necessary to order parts direct from the manufacturer. See Table B-4 for manufacturers code to manufacturers name listing.

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TABLE B-1: 1A1PS1 - 100W, 3 OUTPUT POWER SUPPLY - ELEXON #20161
- BEEHIVE #610-0318

Item No.	Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1	1A1PS1A1		1	P.C. Board - Heatsink Assembly	28905	20260
2	1A1PS1MP1		1	Chassis	28905	30115-1
3	1A1PS1CR1,2		2	Diode	81349	1N1200
4	1A1PS1E1,2		2	Diode Lugs	28905	2501-10-00
5	1A1PS1T1,2		2	Transformer	28905	40103
6	1A1PS1MP2		1	Capacitor Clamp	28905	AP-8
7	1A1PS1MP3		A/R	Rubber, Adhesive Backed, 1/16 THK	28905	
8	1A1PS1H1		1	Spacer, 1¼ x ¼, 6-32	28905	8348
9	1A1PS1H2		8	Spacer	28905	2128
10	1A1PS1P1		1	Connector, Input	27264	1261-03-09-2062
11	1A1PS1E3 Thru E8		6	Terminals	27264	02-09-2118
12	1A1PS1P2		1	Connector, Output	27264	2139-09-50-3121
13	1A1PS1E9 Thru E16		8	Terminals	27264	08-50-0106
14	1APS1MP4,5		2	Pin, Polarizing	27264	2560-1
15	1APS1MP6		1	Heatsink	28905	30115-2

TABLE B-2: 1A1PS1A1 - 3 OUTPUT, REGULATOR - ELEXON #20161

Item No.	Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1	1A1PS1A1E1		1	P.C. Board	28905	20262
2	1A1PS1A1A1		1	P.C. Board Assy, Power Supply	28905	20180
3	1A1PS1A1R1		1	Resistor, 10 ohms, ¼ W, 5%	81349	RC07GF100J
4	1A1PS1A1R2		1	Resistor, 100 ohms, ¼ W, 5%	81349	RC07GF101J
5	1A1PS1A1R3		1	Resistor, 100 ohms, 5 W	81349	
6	1A1PS1A1R4		1	Resistor, 100 ohms, ¼ W, 5%	81349	RC07GF101J
7	1A1PS1A1Q1		1	Transistor	81349	2N2905A
8	1A1PS1A1Q2		1	Transistor	81349	2N3055
9	1A1PS1A1XQ1		1	Transistor, Heatsink	05820	296-2-2B

TABLE B-3: 1A1PS1A1A1 - REGULATOR P.C. BOARD ASSEMBLY - ELEXON #20180 (cont.)

Item No.	Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
44	1A1PS1A1A1R14	6RC-07GF-470	1	Resistor, 47 ohms, 5W	81349	
45	1A1PS1A1A1R15	6RC-07GF-820	1	Resistor, 82 ohms, ¼ W, 5%	81349	RC07GF820J
46	1A1PS1A1A1R16	6RC-07GF-102	1	Resistor, 1K, ¼ W, 5%	81349	RC07GF102J
47	1A1PS1A1A1R17		1	Potentiometer	32715	X201-R-502B
48	1A1PS1A1A1R18	6RC-07GF-332	1	Resistor, 3.3K, ¼ W, 5%	81349	RC07GF332J
49	1A1PS1A1A1R19	6RC-07GF-472	1	Resistor, 4.7K, ¼ W, 5%	81349	RC07GF472J
50	1A1PS1A1A1R20	6RC-07GF-101	1	Resistor, 100 ohms, ¼ W, 5%	81349	RC07GF101J
51	1A1PS1A1A1R21	6RC-07GF-470	1	Resistor, 47 ohms, ¼ W, 5%	81349	RC07GF470J
52	1A1PS1A1A1R25	6RC-07GF-121	1	Resistor, 120 ohms, ¼ W, 5%	81349	RC07GF121J
53	1A1PS1A1A1R26	6RC-07GF-332	1	Resistor, 3.3K, ¼ W, 5%	81349	RC07GF332J
54	1A1PS1A1A1R27		1	Potentiometer	32715	X201-R-502B
55	1A1PS1A1A1R28	6RC-07GF-682	1	Resistor, 6.8K, ¼ W, 5%	81349	RC07GF682J
56	1A1PS1A1A1R29	6RC-07GF-182	1	Resistor, 1.8K, ¼ W, 5%	81349	RC07GF182J
57	1A1PS1A1A1R30	6RC-07GF-470	1	Resistor, 47 ohms, ¼ W, 5%	81349	RC07GF470J
58	1A1PS1A1A1R31	6RC-07GF-102	1	Resistor, 1K, ¼ W, 5%	81349	RC07GF102J
59	1A1PS1A1A1R32	6RC-07GF-181	1	Resistor, 180 ohms, ¼ W, 5%	81349	RC07GF181J
60	1A1PS1A1A1R33		1	Potentiometer	32715	X201-R-101B
61	1A1PS1A1A1R34	6RC-07GF-101	1	Resistor, 100 ohms, ¼ W, 5%	81349	RC07GF101J
62	1A1PS1A1A1R35	6RC-07GF-470	1	Resistor, 47 ohms, ¼ W, 5%	81349	RC07GF470J
63	1A1PS1A1A1R36	6RC-07GF-102	1	Resistor, 1K, ¼ W, 5%	81349	RC07GF102J
64	1A1PS1A1A1R37	6RC-07GF-221	1	Resistor, 220 ohms, ¼ W, 5%	81349	RC07GF221J
65	1A1PS1A1A1R38	6RC-07GF-221	1	Resistor, 220 ohms, ¼ W, 5%	81349	RC07GF221J
66	1A1PS1A1A1R39	6RC-07GF-1502	1	Resistor, 15K, ¼ W, 5%	81349	RC07GF153J
67	1A1PS1A1A1R40	6RC-07GF-101	1	Resistor, 100 ohms, ¼ W, 5%	81349	RC07GF101J
68	1A1PS1A1A1R41	6RC-07GF-181	1	Resistor, 180 ohms, ¼ W, 5%	81349	RC07GF181J
69	1A1PS1A1A1R42	6RC-07GF-470	1	Resistor, 47 ohms, 5W	81349	
70	1A1PS1A1A1R43	6RC-07GF-101	1	Resistor, 100 ohms, ¼ W, 5%	81349	RC07GF101J
71	1A1PS1A1A1R44	6RC-07GF-101	1	Resistor, 100 ohms, ¼ W, 5%	81349	RC07GF101J
72	1A1PS1A1A1XQ3		1	Transistor, Heatsink	05820	296-2-AB
73	1A1PS1A1A1Q3		1	Transistor	81349	2N2905A
74	1A1PS1A1A1Q4		1	Transistor	81349	2N3055
75	1A1PS1A1A1Q5		1	Transistor	81349	2N3055
76	1A1PS1A1A1Q6		1	Transistor	81349	2N3055
77	1A1PS1A1A1Q7		1	Transistor	81349	2N4870
78	1A1PS1A1A1Q8	603-T180-2222	1	Transistor	81349	2N2222
79	1A1PS1A1A1Q9		1	Transistor (SCR)	28905	S2006LS3
80	1A1PS1A1A1Q10		1	Transistor (SCR)	28905	S2006LS3
81	1A1PS1A1A1Q11		1	Transistor (SCR)	28905	S2006LS3

TABLE B-3: 1A1PS1A1A1 - REGULATOR P.C. BOARD ASSEMBLY - ELEXON #20180

Item No.	Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1	1A1PS1A1A1E1		1	P.C. Board	28905	20182
2	1A1PS1A1A1MP1		1	Heatsink	28905	30115-02
3	1A1PS1A1A1MP2,3		2	Heatsink	28905	30102-1
4	1A1PS1A1A1C1		1	Capacitor, 38 KVF, 15 V	28905	
5	1A1PS1A1A1C2		1	Capacitor, 6100 UF, 50 V	28905	
6	1A1PS1A1A1C3		1	Capacitor, 6100 UF, 50 V	28905	
7	1A1PS1A1A1C4		1	Capacitor, .0047 UF, 100 V	28905	
8	1A1PS1A1A1C5		1	Capacitor, .0047 UF, 100 V	28905	
9	1A1PS1A1A1C6		1	Capacitor, .0047 UF, 100 V	28905	
10	1A1PS1A1A1C7		1	Capacitor, .047 UF, 100 V	28905	
11	1A1PS1A1A1C8		1	Capacitor, 47 UF, 3 V	28905	
12	1A1PS1A1A1C9	622-BGEO-108K	1	Capacitor, 1000 UF, 6.3 V	28905	
13	1A1PS1A1A1C10		1	Capacitor, 470 UF, 16 V	28905	
14	1A1PS1A1A1C11		1	Capacitor, 470 UF, 16 V	28905	
15	1A1PS1A1A1C12		1	Capacitor, .047 UF, 100 V	28905	
16	1A1PS1A1A1C13		1	Capacitor, 47 UF, 3 V	28905	
17	1A1PS1A1A1C14		1	Capacitor, .047 UF, 100 V	28905	
18	1A1PS1A1A1C15		1	Capacitor, .047 UF, 100 V	28905	
19	1A1PS1A1A1C16		1	Capacitor, .047 UF, 100 V	28905	
20	1A1PS1A1A1CR1		1	Diode	81349	IN 4742
21	1A1PS1A1A1CR2		1	Diode	81349	IN 4742
22	1A1PS1A1A1CR3		1	Diode	81349	IN 4742
23	1A1PS1A1A1CR4	603-D410-4742	1	Diode	81349	IN 4742
24	1A1PS1A1A1CR5		1	Diode	81349	IN 751A
25	1A1PS1A1A1CR6		1	Diode	81349	IN 5248A
26	1A1PS1A1A1CR7	603-D070-0914	1	Diode	81349	IN4446 or IN914
27	1A1PS1A1A1CR8		1	Diode	81349	IN 5244A
28	1A1PS1A1A1U1		1	I.C. Regulator	07263	723 CL U9A772393
29	1A1PS1A1A1U2		1	I.C. Regulator	07263	723 CL U9A772393
30	1A1PS1A1A1U3		1	I.C. Regulator	07263	723 CL U9A772393
31	1A1PS1A1A1XU1-3		3	I.C. Connector	27264	CA145105D
32	1A1PS1A1A1R1	6RC-07GF-470	1	Resistor, 47 ohms, ¼ W, 5%	81349	RC07GF470J
33	1A1PS1A1A1R2	6RC-07GF-470	1	Resistor, 47 ohms, ¼ W, 5%	81349	RC07GF470J
34	1A1PS1A1A1R3	6RC-07GF-471	1	Resistor, 470 ohms, ¼ W, 5%	81349	RC07GF471J
35	1A1PS1A1A1R4	6RC-07GF-180	1	Resistor, 18 ohms, 5 W	81349	RC07GF153J
36						
37	1A1PS1A1A1R6	6RC-07GF-682	1	Resistor, 6.8 K, ¼ W, 5%	81349	RC07GF682J
38	1A1PS1A1A1R7		1	Potentiometer	32715	X201-R-502B
39	1A1PS1A1A1R8	6RC-07GF-472	1	Resistor, 4.7K, ¼ W, 5%	81349	RC07GF472J
40	1A1PS1A1A1R10	6RC-07GF-102	1	Resistor, 1K, ¼ W, 5%	81349	RC07GF102J
41	1A1PS1A1A1R11	6RC-07GF-682	1	Resistor, 6.8 K, ¼ W, 5%	81349	RC07GF682J
42	1A1PS1A1A1R12	6RC-07GF-100	1	Resistor, 10 ohms, ¼ W, 5%	81349	RC07GF100J
43	1A1PS1A1A1R13	6RC-07GF-101	1	Resistor, 100 ohms, ¼ W, 5%	81349	RC07GF101J

TABLE B-4 : Manufacturer code translation to manufacture name and location.

Manufacturer code numbers shown in this table are per federal supply code for manufacturers cataloging handbooks H4-1 and H4-2.		
Mfr. Code	Manufacturer	Address
05820	Wakefield Engineering, Inc.	Wakefield, Mass.
07263	Fairchild, Semi-Conductor Div.	Mountain View, Calif.
27264	Molex Products Co.	Downers Grove, Ill.
28905	Elexon, Inc.	Santa Ana, Calif.
32715	CTS Electronics	Cleveland, Ohio
81349	Mil Spec Part Standardization Manual 4120-3-M	

TABLE B-5: Reference Designations

REFERENCE DESIGNATIONS			
A=	Assembly, Subassembly	PS=	Power Supply
C=	Capacitor	Q=	Transistor
CR=	Diode	R=	Resistor, Potentiometer
E=	Misc. Electrical Part	T=	Transformer
H=	Spacer	U=	Integrated Circuit
MP=	Misc. Mechanical Part	X=	Heat Sink, Socket
P=	Connector		

C

C

C

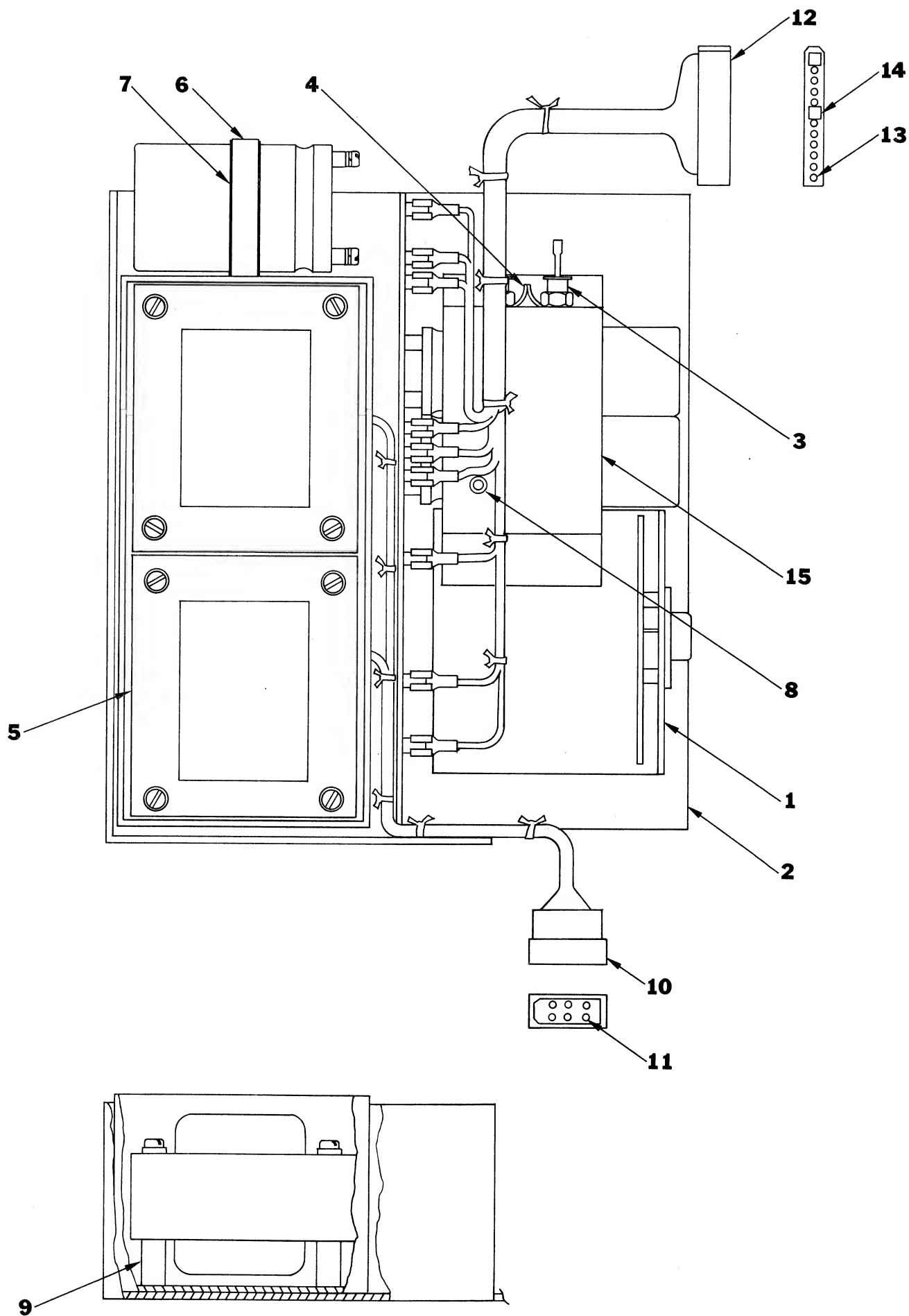


Figure B-1. 100W, 3 Output, Power Supply

C

C

C

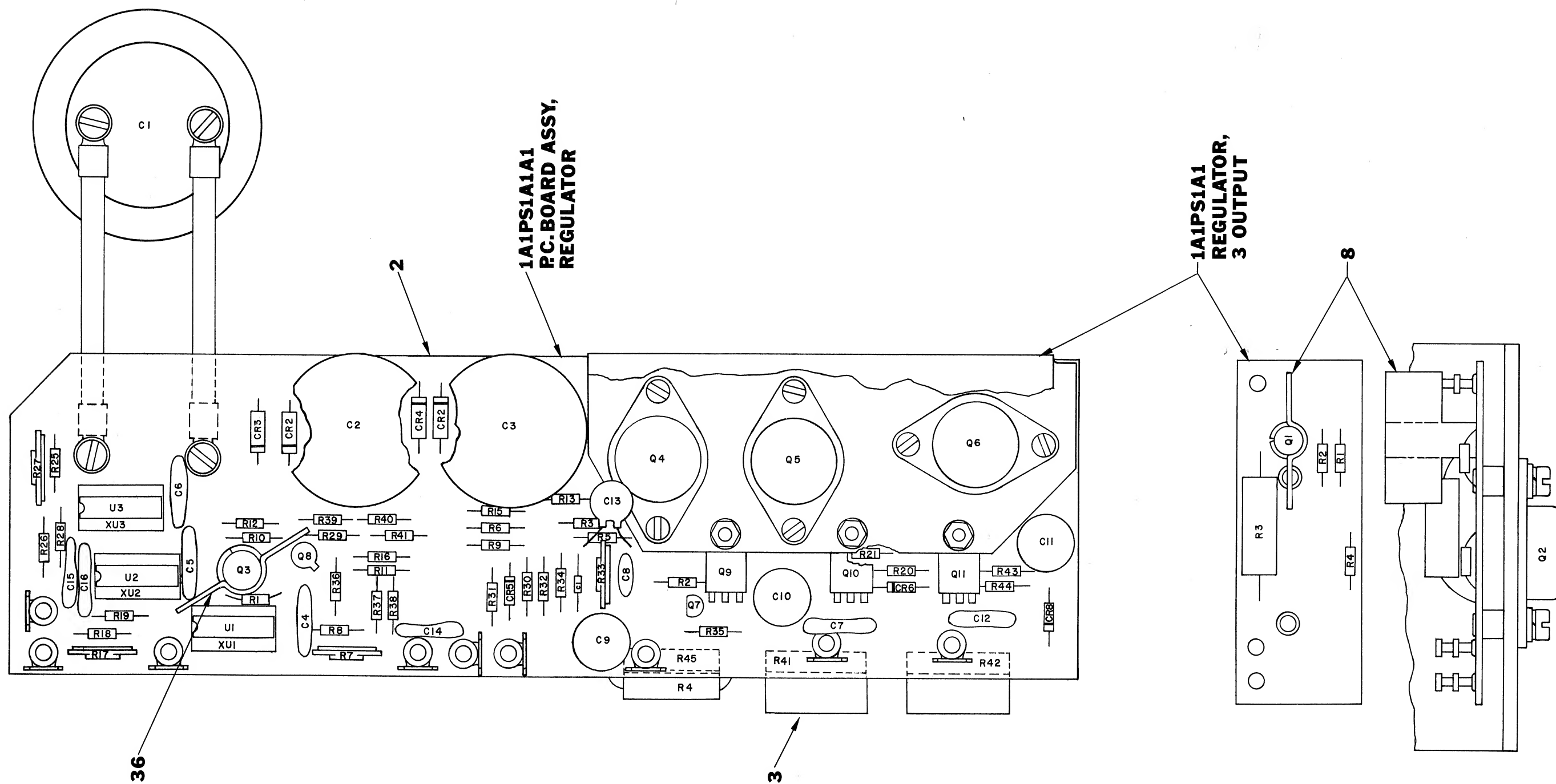


Figure B-2. 3 Output Regulator and Regulator P.C. Board Assembly

APPENDIX C

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C-1 Introduction:

C-2 This appendix contains replaceable parts list and parts location diagrams for the keyboard used in the Mini Bee Computer Display Terminal. The Micro Switch keyboard number is 53SW1-8. The B.M.E.I. part number is 607-2014.

C-3 This keyboard is shipped from Micro Switch with either one of two circuit boards.

Micro Switch #SW10259 - Appendix C-1 or

Micro Switch #SW11339 - Appendix C-2

The key location and function of the keyboard does not change with either circuit board.

C-4 Replaceable Parts Lists and Location Diagrams:

C-5 The parts lists and location diagrams found in this appendix are cross referenced and listed by reference designation only, see table C-4 for reference code to name listing.

C-6 Ordering Parts:

C-7 Most parts contained in this keyboard are available commercially from electrical parts outlets. If it is necessary to order parts direct from the manufacturer, see table C-3 for manufacturers code to name listing.



TABLE C-1: 1A2A1A1 - KEYBOARD P.C. BOARD ASSEMBLY - MICRO SWITCH #SW10259

Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1A2A1A1IC1		1	Integrated Circuit	91929	RW-10038
1A2A1A1IC2		1	Integrated Circuit	91929	RW-10039
1A2A1A1IC3		1	Integrated Circuit	91929	RW-10038
1A2A1A1IC4		1	Integrated Circuit	91929	RW-10039
1A2A1A1IC5		1	Integrated Circuit	95303	CA-3046
1A2A1A1IC6		1	Integrated Circuit	04713	MC-836P
1A2A1A1IC8		1	Integrated Circuit	04713	MC-1812P
1A2A1A1IC9		1	Integrated Circuit	04713	MC-846P
1A2A1A1IC10		1	Integrated Circuit	04713	MC-836P
1A2A1A1IC11		1	Integrated Circuit	04713	MC-1812P
1A2A1A1R1		1	Resistor 432 ohms \pm 1%	81349	RN55D3920F
1A2A1A1R2		1	Resistor 432 ohms \pm 1%	81349	RN55D4320F
1A2A1A1R3		1	Resistor 392 ohms \pm 1%	81349	RN55D3920F
1A2A1A1R4		1	Resistor 1,690 ohms \pm 1%	81349	RN55D1691F
1A2A1A1R5		1	Resistor 10K \pm 5%	81349	RC07GF103J
1A2A1A1R6		1	Resistor 6.8K \pm 5%	81349	RC07GF682J
1A2A1A1R7		1	Resistor 2.2K \pm 5%	81349	RC07GF222J
1A2A1A1R8		1	Resistor 5.6K \pm 5%	81349	RC07GF562J
1A2A1A1R9		1	Resistor 6.8K \pm 5%	81349	RC07GF682J
1A2A1A1R11		1	Resistor 3.3K \pm 5%	81349	RC07GF332J
1A2A1A1R12		27	Resistor 1,050 ohms \pm 1%	81349	RN55D1051F
1A2A1A1R13		1	Resistor 470 ohms \pm 5%	81349	RC07GF471J
1A2A1A1R14		1	Resistor 470 ohms \pm 5%	81349	RC07GF471J
1A2A1A1R15		1	Resistor 470 ohms \pm 5%	81349	RC07GF471J
1A2A1A1C1		1	Capacitor .01 MFD, 16 WVDC	91929	
1A2A1A1C2		1	Capacitor .01 MFD, 16 WVDC	91929	
1A2A1A1C5		1	Capacitor .1 MFD, 16 WVDC	91929	
1A2A1A1C6		1	Capacitor 15 MFD	91929	
1A2A1A1EMD1		1	Electrical Monitor Detector	91929	

TABLE C-2: 1A2A1A1 - KEYBOARD P.C. BOARD ASSEMBLY - MICRO SWITCH #SW11339

Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1A2A1A1IC1		1	Integrated Circuit	91929	936PC F7321
1A2A1A1IC2		1	Integrated Circuit	04713	MC 846L
1A2A1A1IC3		1	Integrated Circuit	04713	MC 1812L
1A2A1A1IC4		1	Integrated Circuit	04713	MC 1812L
1A2A1A1IC5		1	Integrated Circuit	95303	CA3046 H218
1A2A1A1IC6		1	Integrated Circuit	91929	RW 10039
1A2A1A1IC7		1	Integrated Circuit	91929	RW 10039
1A2A1A1IC8		1	Integrated Circuit	91929	RW 10038
1A2A1A1IC9		1	Integrated Circuit	91929	RW 10038
1A2A1A1R10		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R11		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R12		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R13		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R14		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R15		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R16		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R17		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R18		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R19		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R20		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R21		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R22		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R23		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R24		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R25		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R26		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R27		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R28		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R29		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R30		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R31		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R32		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R33		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R34		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R35		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R36		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J
1A2A1A1R37		1	Resistor 470 ohms $\pm 5\%$	81349	RC07GF471J
1A2A1A1R38		1	Resistor 470 ohms $\pm 5\%$	81349	RC07GF471J
1A2A1A1R39		1	Resistor 432 ohms $\pm 1\%$	81349	RN55D4320F
1A2A1A1R40		1	Resistor 392 ohms $\pm 1\%$	81349	RN55D3920F
1A2A1A1R41		1	Resistor 5.6K, $\pm 5\%$	81349	RC07GF562J
1A2A1A1R42		1	Resistor 390 ohms $\pm 5\%$	81349	RC07GF391J
1A2A1A1R43		1	Resistor 1,690 ohms $\pm 1\%$	81349	RN55D1691F
1A2A1A1R44		1	Resistor 6.8K, $\pm 5\%$	81349	RC07GF682J
1A2A1A1R45		1	Resistor 6.8K, $\pm 5\%$	81349	RC07GF682J
1A2A1A1R46		1	Resistor 10K, $\pm 5\%$	81349	RC07GF103J

TABLE C-2: 1A2A1A1 - KEYBOARD P.C. BOARD ASSEMBLY - MICRO SWITCH #SW11339 (cont.)

Reference Designation	Beehive Part No.	Qty.	Description	Mfr. Code	Manufacturer Part No.
1A2A1A1R47		1	Resistor 2.2K, $\pm 5\%$	81349	RC07GF222J
1A2A1A1R48		1	Resistor 3.3K, $\pm 5\%$	81349	RC07GF332J
1A2A1A1R49		1	Resistor 432 ohms $\pm 1\%$	81349	RN5 D4320F
1A2A1A1C1		1	Capacitor 15uf, 35 VDC	91929	
1A2A1A1C2		1	Capacitor .1uf, 16 VDC	91929	
1A2A1A1C3		1	Capacitor .01uf, 16 VDC	91929	
1A2A1A1C4		1	Capacitor .01uf, 16 VDC	91929	
1A2A1A1C5		1	Capacitor .01uf, 16 VDC	91929	

TABLE C-3: Manufacturer code translation to manufacturer name and location.

Manufacturer code numbers shown in this table are per federal supply code for manufacturers cataloging handbook H4-1 and H4-2.		
Mfr. Code	Manufacturer	Address
04713	Motorola Semiconductor Products, Inc. Phoenix, Ariz.	
81349	Mil Spec Part Standardization Manual 4120-3-M	
91929	Honeywell Inc., Micro Switch Div.	Freeport, Ill
95303	RCA Corp., Receiving Tube Divn.	Cincinnati, Ohio

TABLE C-4: Reference Designations.

REFERENCE DESIGNATIONS	
A= Assembly, Subassembly	IC= Integrated Circuit
C= Capacitor	R= Resistor
EMD= Electrical Monitor Detector	

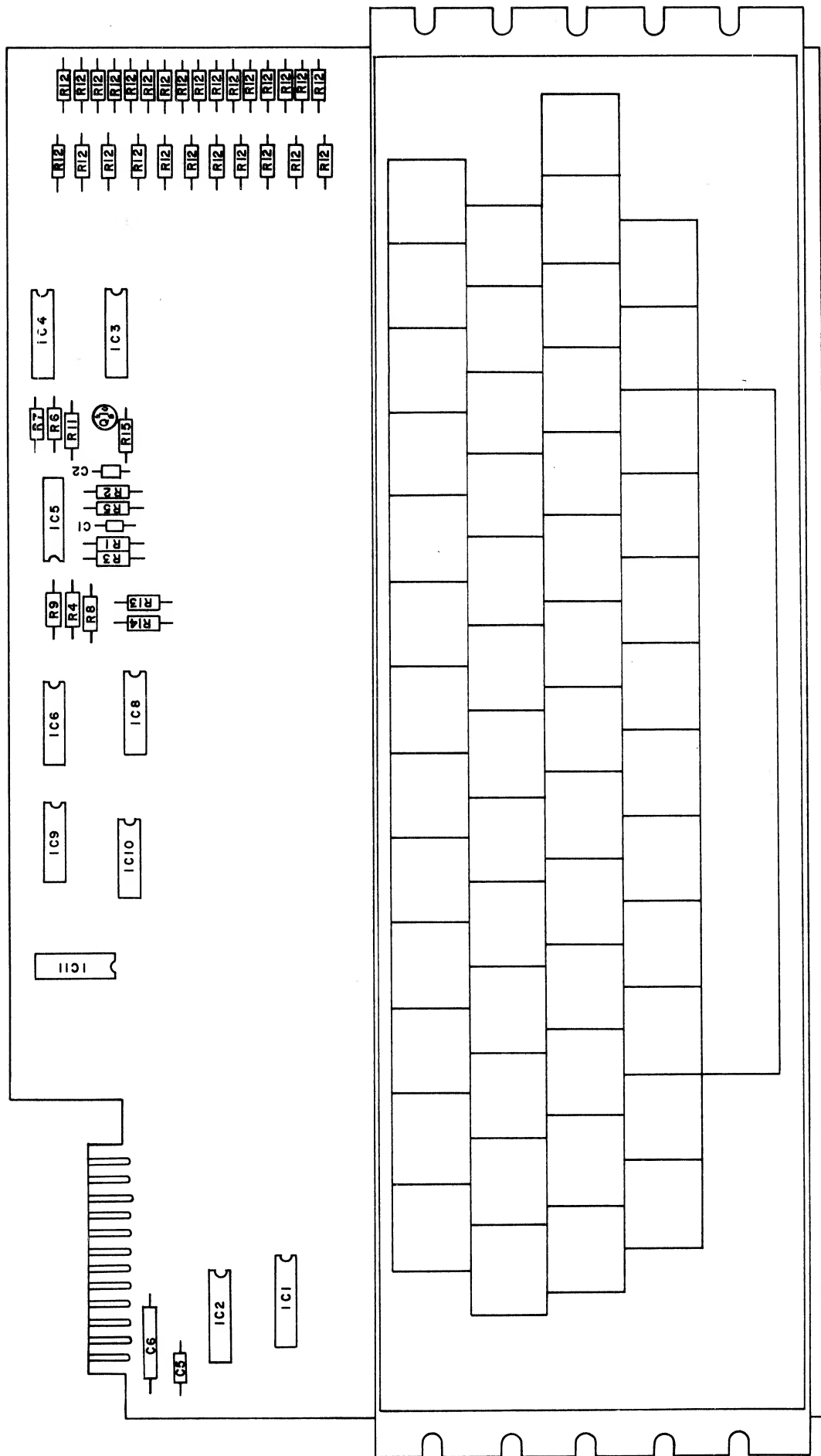


Figure C-1. Circuit Board (SW10259) Keyboard Assembly

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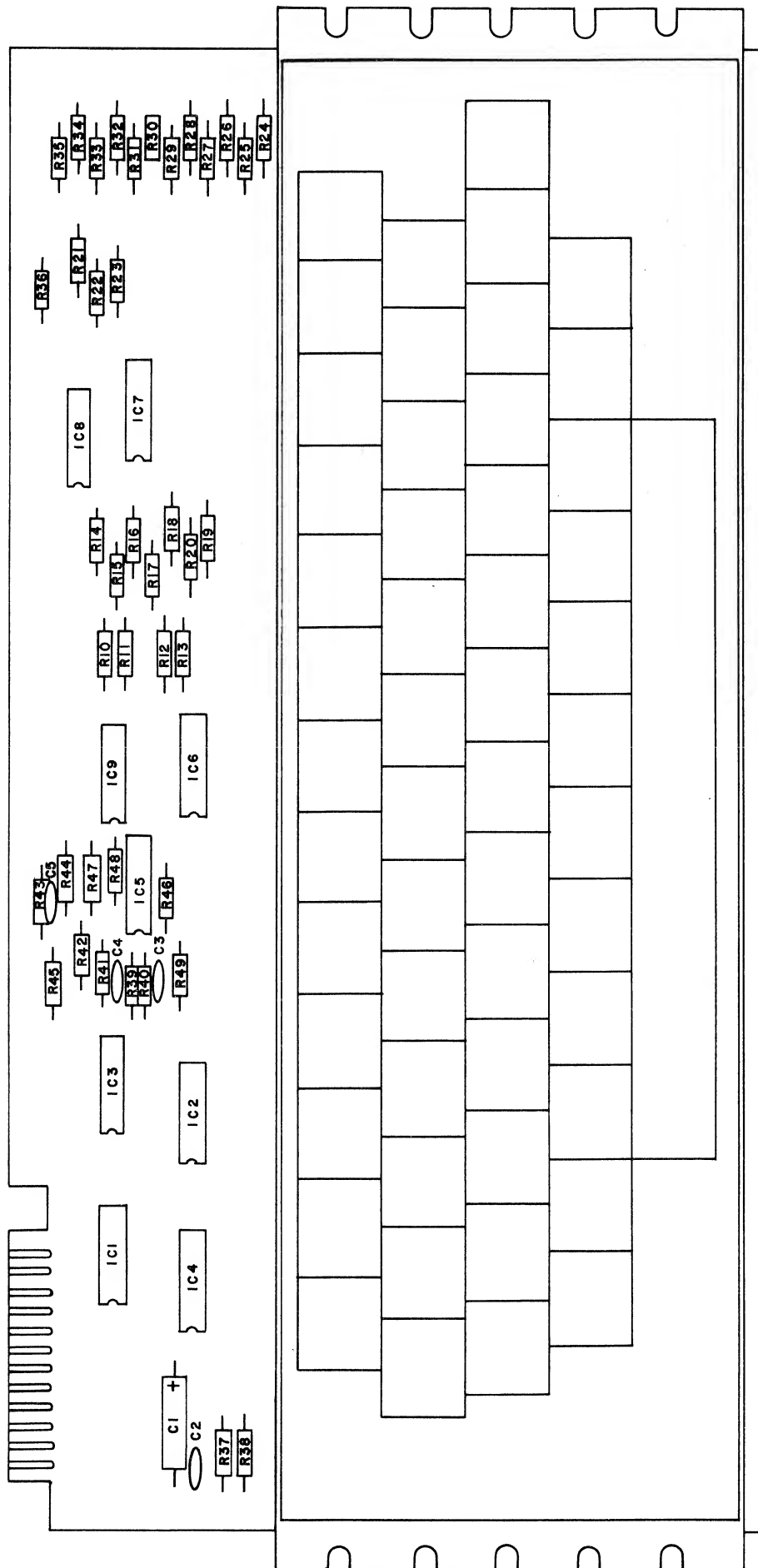


Figure C-2. Circuit Board (SW11339) Keyboard Assembly



ELECTRONIC

SALES & SERVICE OFFICES

UNITED STATES

ALABAMA

8290 Whitesburg Dr., S.E.
P.O. Box 4207
Huntsville 35802
Tel: (205) 881-4591
TWX: 810-726-2204

ARIZONA

2336 E. Magnolia St.
Phoenix 85034
Tel: (602) 244-1361
TWX: 910-951-1330

5737 East Broadway
Tucson 85711
Tel: (602) 298-2313
TWX: 910-952-1162

(Effective Dec. 15, 1973)
2424 East Aragon Rd.
Tucson 85706
Tel: (602) 889-4661

CALIFORNIA

1430 East Orangethorpe Ave.
Fullerton 92631
Tel: (714) 870-1000
TWX: 910-592-1288

3939 Lankershim Boulevard
North Hollywood 91604
Tel: (213) 877-1282
TWX: 910-499-2170

6305 Arizona Place
Los Angeles 90045
Tel: (213) 649-2511
TWX: 910-328-6148

1101 Embarcadero Road
Palo Alto 94303
Tel: (415) 327-6500
TWX: 910-373-1280

2220 Watt Ave.
Sacramento 95825
Tel: (916) 482-1463
TWX: 910-367-2092

9606 Aero Drive
P.O. Box 23333
San Diego 92123
Tel: (714) 279-3200
TWX: 910-335-2000

COLORADO

7965 East Prentice
Englewood 80110
Tel: (303) 771-3455
TWX: 910-935-0705

CONNECTICUT

12 Lunar Drive
New Haven 06525
Tel: (203) 389-6551
TWX: 710-465-2029

FLORIDA

P.O. Box 24210
2806 W. Oakland Park Blvd.
Ft. Lauderdale 33307
Tel: (305) 731-2020
TWX: 510-955-4099

P.O. Box 13910
6177 Lake Ellenor Dr.
Orlando 32809
Tel: (305) 859-2900
TWX: 810-850-0113

GEORGIA

P.O. Box 28234
450 Interstate North
Atlanta 30328
Tel: (404) 436-6181
TWX: 810-766-4890

HAWAII

2875 So. King Street
Honolulu 96814
Tel: (808) 955-4455

ILLINOIS

5500 Howard Street
Skokie 60076
Tel: (312) 677-0400
TWX: 910-223-3613

INDIANA

3839 Meadows Drive
Indianapolis 46205
Tel: (317) 546-4891
TWX: 810-341-3263

LOUISIANA

P.O. Box 840
3239 Williams Boulevard
Kenner 70062
Tel: (504) 721-6201
TWX: 810-955-5524

MARYLAND

6707 Whitestone Road
Baltimore 21207
Tel: (301) 944-5400
TWX: 710-862-9157

20010 Century Blvd.

Germanstown 20767
Tel: (31) 428-0700
P.O. Box 1648
2 Choke Cherry Road
Rockville 20850

Tel: (301) 948-6370
TWX: 710-828-9684

MASSACHUSETTS

32 Hartwell Ave.
Lexington 02173
Tel: (617) 861-8960
TWX: 710-326-6904

MICHIGAN

23855 Research Drive
Farmington 48024
Tel: (313) 476-6400
TWX: 810-242-2900

MINNESOTA

2459 University Avenue
Kansas City 64137
Tel: (816) 763-8000
TWX: 910-563-3734

MISSOURI

11131 Colorado Ave.
Kansas City 64137
Tel: (816) 763-8000
TWX: 910-771-2087

148 Weldon Parkway
Maryland Heights 63043
Tel: (314) 567-1455
TWX: 910-764-0830

*NEVADA

Las Vegas
Tel: (702) 382-5777

NEW JERSEY

1060 N. Kings Highway
Cherry Hill 08034
Tel: (609) 667-4000
TWX: 710-892-4945

W. 120 Century Rd.
Paramus 07652
Tel: (201) 265-5000
TWX: 710-990-4951

NEW MEXICO

P.O. Box 8366
Station C
6501 Lomas Boulevard N.E.
Albuquerque 87108
Tel: (505) 265-3713
TWX: 910-989-1665

158 Wyatt Drive
Las Cruces 88001
Tel: (505) 526-2485
TWX: 910-983-0550

NEW YORK

6 Automation Lane
Computer Park
Albany 12205
Tel: (518) 458-1550
TWX: 710-441-8270

1219 Campville Road
Endicott 13760
Tel: (607) 754-0050
TWX: 510-252-0890

New York City

Manhattan, Bronx
Contact Paramus, NJ Office
Tel: (201) 265-5000
Brooklyn, Queens, Richmond
Contact Woodbury, NY Office
Tel: (516) 921-0300

82 Washington Street
Poughkeepsie 12601
Tel: (914) 454-7330
TWX: 510-248-0012

39 Saginaw Drive
Rochester 14623
Tel: (716) 473-9500
TWX: 510-253-5981

5858 East Molloy Road
Syracuse 13211
Tel: (315) 454-2486
TWX: 710-541-0482

1 Crossways Park West
Woodbury 11797
Tel: (516) 921-0300
TWX: 510-221-2168

NORTH CAROLINA

P.O. Box 5188
1923 North Main Street
High Point 27262
Tel: (919) 885-8101
TWX: 510-926-1516

OHIO

25575 Center Ridge Road
Cleveland 44145
Tel: (216) 835-0300
TWX: 810-427-9129

330 Progress Rd.
Dayton 45449
Tel: (513) 859-8202
TWX: 810-459-1925

6665 Busch Blvd.
Columbus 43229
Tel: (614) 846-1300

OKLAHOMA

P.O. Box 32008
Oklahoma City 73132
Tel: (405) 721-0200
TWX: 910-830-8862

OREGON

17890 SW Boones Ferry Road
Tualatin 97062
Tel: (503) 620-3350
TWX: 910-467-8714

PENNSYLVANIA

2500 Moss Side Boulevard
Monroeville 15146
Tel: (412) 271-0724
TWX: 710-797-3650

1021 8th Avenue
King of Prussia Industrial Park
King of Prussia 19406
Tel: (215) 265-7000
TWX: 510-660-2670

RHODE ISLAND

873 Waterman Ave.
East Providence 02914
Tel: (401) 434-5535
TWX: 710-381-7573

*TENNESSEE

Memphis
Tel: (901) 274-7472

TEXAS

P.O. Box 1270
201 E. Arapaho Rd.
Richardson 75080
Tel: (214) 231-6101
TWX: 910-867-4723

P.O. Box 27409
6300 Westpark Drive
Suite 100
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